

STE20_h	-----MAHLLRGFANQHRSV-----DPEELFTKLDRIGKGSFGEVYKGINHTK	43
MST3_h	-----MAHSPVQSGLPQMQLKADPEELFTKLEKIGKGSFGEVFKGINRTQ	47
STLK2_h	-----MAHSPVAVQVPGMQNNIADPEELFTKLEERIGKGSFGEVFKGINRTQ	47
STLK3_h	TAAPAAPAAPAAPAPAAQAAGWPICRDAYELQEIVIGSGATAVAVQAALCKPRQ	57
STE20_h	EVVAIKIIDL EEADEIEDIQEITVLSQCDSPIYITR YIFGSYLKSTKLWIIIMEYLG	100
MST3_h	KVVAIKIIDL EEADEIEDIQEITVLSQCDSPIYVTKYYGSYLKDTKLWIIIMEYLG	104
STLK2_h	QVVAIKIIDL EEADEIEDIQEITVLSQCDSPIYVTKYYGSYLKGSKLWIIIMEYLG	104
STLK3_h	ERVAIKRINLEKQTSMDLELKEIQAMSQCSHPNVVITYTTSFVVKDELWLVMKLLSG	114
STE20_h	GSALDLLKPGP-----LEETYYIATILREILKGLDYLHSEKIHARDIKAANVLL	148
MST3_h	GSALDLLKPGP-----LDEITQIATILREILKGLDYLHSEKIHARDIKAANVLL	152
STLK2_h	GSALDLLKPGP-----FDEFQIATMLKEILKGLDYLHSEKIHARDIKAANVLL	152
STLK3_h	GSMLDI IKYIVNRGEHKNGVLEEAIIATILKEVLEGLDYLHRNGQIHARDIKAGNILL	171
STLK4_h	-----KSGVLDXSTIATILREVLLEGLLEYLHKXGQIHARDVKAAGNILLX	41
STE20_h	SEQGDDVKLADFVGV--A--GQLTDTQIKRNTFVGTPTFFWMAPEVIKQSA--YDFKADI	198
MST3_h	SEHGEVKLADFVGV--A--GQLTDTQIKRNTFVGTPTFFWMAPEVIKQSA--YDSKADI	202
STLK2_h	SEQGDDVKLADFVGV--A--GQLTDTQIKRNTFVGTPTFFWMAPEVIKQSA--YDSKADI	202
STLK3_h	GEDGSVQIADFVGVSAFLATGGDVTRNKV--RKTFVGTPTCWWMAPEVMEQVVRGYDFKADM	227
STLK4_h	GEDGSVQIADFVGVSAFLATGGDITRNKV--RKTFVGTPTCWWMAPEVMEQVVRGYDFKADI	97

Fig. 1A

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STE20_h	- - - - -	- - - - -	- - - - -	T F P P T	I R P S P H S K L H K G	T A L H S S Q	K P A E P V K	350
MST3_h	- - - - -	- - - - -	- - - - -	D W I F T	I R E K D P K N L E N G	A L Q P S D L	D R N K M K D	354
STLK2_h	- - - - -	- - - - -	- - - - -	S F T T V R K K P D P K K V Q N G	A E Q D L V Q T L S	- - - - -	- - - - -	351
STLK3_h	- - - - -	- - - - -	- - - - -	N P E I A V S A S T I P E Q I Q S L S V H D S Q	G P P N A N E	- - - - -	- - - - -	413
STLK4_h	L L Q V P E Q I S A H L P Q P A G Q I A T Q P T Q V S L P P T	I A E P A K T A Q A L S S G S G S Q E T K I P	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	320

2176

STE20_h	RQ--PRSQCLSTLVRPVFGELKEKHKQSGGSGVGAL	EEL	ENAFSLAEE	SCPGTIS	DKLM	405
MST3_h	IPKRPFSQCLSTIISPLFAELKEKSQACGGNLSI	EEL	RGAIYLAEE	CPGIS	DTMV	411
STLK2_h	-----CLSMIITPAFAELKQDENNASRNQAI	EEL	EKSI AVAEE	CPGIT	DKMV	400
STLK3_h	DY--REASSCAVNLVRLRNSRRELNDIRFEFTPG	RD	TADGV	SQELF	SAGLVDGHDV	468
STLK4_h	-----ISLVRLRNSKRELNDIRFEFTPG	RD	TAEGV	SQELI	SAGLVDGRDL	366
STE20_h	VH L V E R V Q R F S H N R N H L T S T R					426
MST3_h	A Q L V Q R L Q R Y S L S G G G T S S H					431
STLK2_h	K K L I E K F Q K C S A D E S P					416
STLK3_h	V I V A A N L Q K I V D D P K A L K T L T F K L A S G C D G S E I P D E V K L I G F A Q L S V S					516
STLK4_h	V I V A A N L Q K I V E E P Q S N R S V T F K L A S G V E G S D I P D D G K L I G F A Q L S I S					414

Fig. 1C

Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

Ste20_h	MAHLRGFANQHSRV	-----DPEELFTKLDRI	IGKGSFGE	VYKGI	DNHT	K	43																																																
T19A5.2_ce	MTTSSDELPRQADDDSMKWDRIYIQKLDPEVIFTKQER	IGRGSFGE	VYKGI	DNR	T	G	57																																																
Pak_sp	-----	-----LLYRNFVKIGQ	GS	GDVY	SARQV	IN	26																																																
STLK5_h	-----	-----	-----	-----	-----	-----	0																																																
Ste20_h	EVVAIKIIDLLEEADEIED	IQEITVLSQCDSPYITRYFGSYLKSTK	LWII	IMEYL	G	G	100																																																
T19A5.2_ce	RVVAIKIIDLLEQAEDIED	IQEIQVLSQCDSPYVTKYFGSFLKGSK	LWII	IMEYL	G	G	114																																																
Pak_sp	LSVAIKKMNINQQPKKEF	IVNEILVMKSHHKNI	VNFIDTFFYKSE	LWMVM	EYMR	G	82																																																
STLK5_h	-----	-----	-----	-----	-----	-----	0																																																
Ste20_h	GSA	LDLLKPGPLEET	YIA	TILREI	LKGLDYLH	SERKIIHRDIKAA	NVL	SE	Q	GDV	KLA	157																																											
T19A5.2_ce	GSA	LDLTGSGKLD	ESHIA	VILREI	LKGLDY	LH	SERKIIHRDIKAA	NVL	V	SE	H	GDV	KVA	171																																									
Pak_sp	GSL	TEVVTNNTL	SEGQIA	AI	CKET	LEGLQHL	HENGIVHRDIKSDN	IL	L	SL	Q	DI	IKL	IT	139																																								
STLK5_h	--	LICTHFM	DGMNELA	IA	YIL	QGV	LKALDYI	IHHMGYVHR	SVKASHIL	IS	V	D	G	KVYL	S	55																																							
Ste20_h	DFG	VAGQL	TDTQIKRNT	FVGT	PF	-----WMAPEVIKQSA	-----YDFKAD	I	W	S	L	G	I	T	A	205																																							
T19A5.2_ce	DFG	VAGQL	TETVKKRI	TFVG	SPF	-----WMAPELIKQSS	-----YDYKAD	I	W	S	L	G	I	T	A	219																																							
Pak_sp	DFG	FCAQ	IDSNMTKRT	TMVG	TPY	-----WMAPEVVT	TRKE	-----YGFKVD	V	W	S	L	G	I	MA	187																																							
STLK5_h	GLR	SNLS	MISAG	QRQRVVHDF	PKYSVKVLP	WLSPEVL	QNLQGYDA	KSDI	Y	S	V	G	I	T	A	112																																							
Ste20_h	I	E	L	A	K	G	E	P	P	N	S	D	L	H	P	M	R	V	I	F	L	I	P	K	-	N	S	P	P	T	I	L	E	G	-	Q	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	238							
T19A5.2_ce	I	E	L	A	N	G	E	P	P	H	S	D	L	H	P	M	R	V	I	F	L	I	P	K	-	N	P	P	P	V	L	Q	G	S	Q	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	253									
Pak_sp	I	E	M	V	E	G	E	P	P	Y	L	N	E	N	P	L	R	A	L	Y	L	I	A	T	I	G	T	P	K	I	S	R	P	E	L	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	222									
STLK5_h	C	E	L	A	N	G	H	V	P	F	K	D	M	P	A	T	Q	M	L	L	E	K	L	N	-	G	T	V	P	C	L	D	-	T	S	T	I	P	A	E	E	L	T	M	S	P	S	V	A	N	S	G	L	S	167

Fig. 2A

ZC504.4_ce	MSSSGEDE	-----	IDLNS	SLRDPAGIFEL	I	EVVGN	GT	YG	Q	V	Y	K	GRHV	K	T	A	Q	L	A	A	I	K	I	M	N	I	N	E	58																																
NIK_m	MANDSPAKSLVD	IDL	SS	SLRDPAGIFEL	V	EVVGN	GT	YG	Q	V	Y	K	GRHV	K	T	V	T	-	A	A	I	K	V	M	D	V	T	E	69																																
ZC1_h	MANDSPAKSLVD	IDL	SS	SLRDPAGIFEL	V	EVVGN	GT	YG	Q	V	Y	K	GRHV	K	T	G	Q	L	A	A	I	K	V	M	D	V	T	E	60																																
ZC2_h	-----	-----	-----	-----	-----	AF	GE	EV	YE	GR	HV	K	T	G	Q	L	A	A	I	K	V	M	D	V	T	G	28																																		
ZC3_h	-----	-----	-----	-----	-----	AF	GE	EV	YE	GR	HV	K	T	G	Q	L	A	A	I	K	V	M	D	V	T	E	28																																		
ZC504.4_ce	DEE	DE	EIKLEINMLKK	HSHHRN	V	A	T	Y	G	A	F	I	K	K	L	P	S	S	T	G	K	H	D	Q	L	W	L	V	M	E	F	C	G	S	G	S	I	T	D	L	V	K	116																		
NIK_m	DEE	EE	ITLEINMLKKY	SHHRNI	A	T	Y	G	A	F	I	K	K	S	P	P	G	H	D	-	-	-	-	D	Q	L	W	L	V	M	E	F	C	G	S	I	T	D	L	V	K	117																			
ZC1_h	DEE	EE	EIKLEINMLKKY	SHHRNI	A	T	Y	G	A	F	I	K	K	S	P	P	G	H	D	-	-	-	-	D	Q	L	W	L	V	M	E	F	C	G	S	I	T	D	L	V	K	118																			
ZC2_h	DEE	EE	EIKQLEINMLKKY	SHHRNI	A	T	Y	G	A	F	I	K	K	N	P	P	G	M	D	-	-	-	-	D	Q	L	W	L	V	M	E	F	C	G	S	V	T	D	L	I	K	84																			
ZC3_h	DEE	EE	EIKQLEINMLKKY	SHHRNI	A	T	Y	G	A	F	I	K	K	S	P	P	G	N	D	-	-	-	-	D	Q	L	W	L	V	M	E	F	C	G	S	V	T	D	L	V	K	84																			
ZC504.4_ce	NTKG	G	S	L	K	E	E	W	I	A	Y	I	C	R	E	I	L	R	G	L	Y	H	L	H	Q	S	K	V	I	H	R	D	I	K	G	Q	N	V	L	L	T	D	S	A	E	V	K	L	V	D	F	G	V	S	A	Q	L	176			
NIK_m	NTKG	N	T	L	K	E	D	W	I	A	Y	I	S	R	E	I	L	R	G	L	A	H	L	H	I	H	V	I	H	R	D	I	K	G	Q	N	V	L	L	T	E	N	A	E	V	K	L	V	D	F	G	V	S	A	Q	L	177				
ZC1_h	NTKG	N	T	L	K	E	D	W	I	A	Y	I	S	R	E	I	L	R	G	L	A	H	L	H	I	H	V	I	H	R	D	I	K	G	Q	N	V	L	L	T	E	N	A	E	V	K	L	V	D	F	G	V	S	A	Q	L	178				
ZC2_h	NTKG	N	T	L	K	E	E	W	I	A	Y	I	C	R	E	I	L	R	G	L	S	H	L	H	Q	H	K	V	I	H	R	D	I	K	G	Q	N	V	L	L	T	E	N	A	E	V	K	L	V	D	F	G	V	S	A	Q	L	144			
ZC3_h	NTKG	N	A	L	K	E	D	C	I	A	Y	I	C	R	E	I	L	R	G	L	A	H	L	H	A	H	K	V	I	H	R	D	I	K	G	Q	N	V	L	L	T	E	N	A	E	V	K	L	V	D	F	G	V	S	A	Q	L	144			
ZC504.4_ce	D	K	T	V	G	R	R	N	T	F	I	G	T	P	Y	W	M	A	P	E	V	I	A	C	D	E	S	P	E	A	T	Y	D	S	R	S	D	L	W	S	L	G	I	T	A	L	E	M	A	E	G	H	P	P	L	C	D	M	H	P	236
NIK_m	D	R	T	V	G	R	R	N	T	F	I	G	T	P	Y	W	M	A	P	E	V	I	A	C	D	E	N	P	D	A	T	Y	D	Y	R	S	D	L	W	S	C	G	I	T	A	I	E	M	A	E	G	G	P	P	L	C	D	M	H	P	237
ZC1_h	D	R	T	V	G	R	R	N	T	F	I	G	T	P	Y	W	M	A	P	E	V	I	A	C	D	E	N	P	D	A	T	Y	D	Y	R	S	D	L	W	S	C	G	I	T	A	I	E	M	A	E	G	A	P	P	L	C	D	M	H	P	238
ZC2_h	D	R	T	V	G	R	R	N	T	F	I	G	T	P	Y	W	M	A	P	E	V	I	A	C	D	E	N	P	D	A	T	Y	D	F	K	S	D	L	W	S	L	G	I	T	A	I	E	M	A	E	G	A	P	P	L	C	D	M	H	P	204
ZC3_h	D	R	T	V	G	R	R	N	T	F	I	G	T	P	Y	W	M	A	P	E	V	I	A	C	D	E	N	P	D	A	T	Y	D	Y	R	S	D	T	W	S	L	G	I	T	A	I	E	M	A	E	G	A	P	P	L	C	D	M	H	P	204

Fig. 3A

ZC3_h

ZC3 h

ZC3-h

ZC3_h

Fig. 3B

METHODS

Inventor(s): Gregory PLOWMAN
et al.

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Fig. 3C

Title: PAK5 SCREENING

METHODS

Inventor(s): Gregory PLOWMAN

et al.

Attorney Docket No.: 034536-0688

ZC504.4_ce	-----NSGHGAYKGKKIPEIRPGIISL-DDDDSD	623
NIK_m	-----AWSRSDSEVPVPRVVRTTSRSPVLSRRD	639
ZC1_h	-----PQVPVRTTSRSPVLSRRD	648
ZC2_h	NSDPTSENPLPTRIEKFDSSWLREQEEDIIPPKVPQRTTISISPA	635
ZC3_h	NSDPTSEGPSPNPP-----AWVRPD-NEAPPKVPQRTTISIAATALNTSGAGGSRPAQAVR	689
ZC504.4_ce	SDNE-----EGNEPLMFKPIVRCPFSIFFWFLS	651
NIK_m	QAGQ-----RNSTSSIEPRLLWERVEKLVPRPG	667
ZC1_h	SQAG-----QRNSTSIEPRLLWERVEKLVPRPG	676
ZC2_h	LGSQ-----PIRASNPDLRRTTEPILESPLQRTSSG	665
ZC3_h	ARPRNSAWQIYLQRRRAERGTPKPPGPPAQPPGPPNASNPDLR	742
ZC504.4_ce	ANVIHSVDGSIPLVKHLIWFQNASSRGALPDLLPKSPCLRRQINDQTRQMS	709
NIK_m	SGSSSGSSNSGSGQPGSNPGSQSGSGERFVRSSSKSESGSPSPRQESAAKKPD	725
ZC1_h	SGSSSGSSNSGSGQPGSNPGSQSGSGERFVRSSSKSESGSPSPRQENAVKKPE	734
ZC2_h	SSSSSTPSQPSQSGSQPGSQAGSSERTRVRANSKSESGSPVLPHEPAKVKEE	725
ZC3_h	DSVLPASHGHLP-----QAGSLERNRVGVSSSKPPDSSPVLSPGNKA	792
ZC504.4_ce	QPNGFQ-----NSDSR-----SSIQHSFSNRDREKSFVGVYFGGGAGA	755
NIK_m	RSCLKPAGEDV-----DLTAL-----AKELRAVEDVRPPPHKVTDYSSSSEESGTTDEEEEDVED	777
ZC1_h	RPLKPA-----DLTAL-----AKELRAVEDVRPPPHKVTDYSSSSEESGTTDEEDDVEQ	783
ZC2_h	RPSRPAKYKKAIDEDLTALAKELRELRIEETNRPMKKVTDYSSSSEESSESSEEEEDGES	785
ZC3_h	RPADFV-----L-----LKERTLDEAPRPPKKAMDYSSSSEEVESSEDEEEGEG	837

Fig. 3D

ZC504.4_ce	-----	755
NIK_m	EGADDS TSGPEDTRAASSPNLSNGETESVKTMIVHDDVSESEAMTP-----SKEGTLIV-----	831
ZC1_h	EGADES TSGPEDTRAASSNLNSNGETESVKTMIVHDDVSESEAMTP-----SKEGTLIV-----	837
ZC2_h	ETHDGTVAVSDIPRLIPTGAPGSNEQYNVGMVGTHTGLETSHADSFSGSISREGTLMIRET	845
ZC3_h	GPAEGS-----RDTPGGRDGDIDSVSTMVVDHVEEITGTQPP-----YGGGTMVVVQRT	885
ZC504.4_ce	-----	755
NIK_m	-----	845
ZC1_h	-----RQTQSA SSTLQKHK	851
ZC2_h	SGEKKRSGHSDSNGFAGHINLPDLVQQSHSPAGTPTTEGLGRVSTHSQEMDSSGTEYGMGSS	905
ZC3_h	PEEERNLLHADSNGYT-----NLPDVVQPSHSPTENSKGQSPPSKDGSGDYQSRGLVKAPG-	941
ZC504.4_ce	-----	772
NIK_m	SSSFTPFIDPRLLQIISPS SGTTVTSVVGFS CDGLRPEAIRQDPT-----NQVQVNVTPN SN	901
ZC1_h	SSSFTPFIDPRLLQIISPS SGTTVTSVVGFS CDGMRPEAIRQDPT-----RKGSVVNVNPT	907
ZC2_h	TKASFTPFVDPRVYQTSP TDEDEEESAAALFTGELLRQEQA KLNEARKISVVNVNPT	965
ZC3_h	-KSSFTMFVDLGIYQIPGGSGDSIPITALVGGEGTRLDQLQYDV-----RKGSVVNVNPT	994
ZC4_h	-----	5
ZC504.4_ce	-----	832
NIK_m	GTPAENDIAPEIRKYKKKFSGEILCAALWGVNLLIGTDISGLMLLDRSGQGKVYPLISRRRF	961
ZC1_h	NTRPQSDTPEIRKYKKRFNSEILCAALWGVNLLVGTE SGLMLLDRSGQGKVYPLISRRRF	967
ZC2_h	NTRPQSDTPEIRKYKKRFNSEILCAALWGVNLLVGTE SGLMLLDRSGQGKVYPLINRRRF	1025
ZC3_h	NIRPHSDTPEIRKYKKRFNSEILCAALWGVNLLVGTE NGLMLLDRSGQGKVYPLINRRRF	1054
ZC4_h	NTRAHS EITPEIRKYKKRFNSEILCAALWGVNLLVGTE NGLMLLDRSGQGKVYGLIGRRRF	65
	YVSPACKKPLIHMYEKEEETSEICCGSLWGVNLLIGTRSNLYLMDRSGKADITKLI RRRPPE	

Fig. 3E

ZC504.4_ce	DQMTVLEGNILATISGRKRRIRVYYLSWLRQKILRTEGAGSANTTEKRNQWVNVGD	889
NIK_m	QQMDVLEGNVLTISGKKDKLRVYYLSWLRNKILHNDPEV	1013
ZC1_h	QQMDVLEGNVLTISGKKDKLRVYYLSWLRNKILHNDPEV	1019
ZC2_h	QQMDVLEGNVLTISGKKDKLRVYYLSWLRNRILHNDPEV	1077
ZC3_h	QQMDVLEGNLILITISGKRNKLRVYYLSWLRNKILHNDPEV	1106
ZC4_h	RQLQVLEPLNLLITISGHNRLRVYHLTWLRNKILNDPESSKRRQEEMLKTEEAC	120
ZC504.4_ce	---LQQAIFKIVRIRYERIKFLVVGLESSIEIYAWAPKPYHKFMSFKSFGSLSHVPLIV	944
NIK_m	---LEGCVHYKVVKYERIKFLVIALKSSVEVYAWAPKPYHKFMAFKSFGELHKKPLLV	1068
ZC1_h	---LEGCVHYKVVKYERIKFLVIALKSSVEVYAWAPKPYHKFMAFKSFGELVHKPLLV	1074
ZC2_h	---LEGCVHYKVVKYERIKFLVIALKNAVEIYAWAPKPYHKFMAFKSADLQHKPLLV	1132
ZC3_h	---MEGCVHYRVVVKYERIKFLVIALKSSVEVYAWAPKPYHKFMAFKSADLPHRPLLV	1161
ZC4_h	KAIKLTGCEHFSVQLQHEETTYIAIALKSSITHLYAWAPKSFDESTAIKVEPTLHKPVTIV	180
ZC504.4_ce	DLTVEDNARLKVLYGSTGGFHAIIDLDSAAVYDIYTPAQSGQTTPHCTIVVLPNSNGMQLL	1004
NIK_m	DLTVEEGQRLKVIYGSACGFHAVDVDSGSVYDIYLPTHIQCSIKPHAIILPNTDGMELL	1128
ZC1_h	DLTVEEGQRLKVIYGSACGFHAVDVDSGSVYDIYLPTHIQCSIKPHAIILPNTDGMELL	1134
ZC2_h	DLTVEEGQRLKVIYGSHTGFHVIVDVDSGNSYDIYTPSHIQGNITPHAVILPKTDGMEML	1192
ZC3_h	DLTVEEGQRLKVIYGSACGFHAVDVDSGNSYDIYIPVHIQSQITPHAVILPNTDGMEMML	1221
ZC4_h	DLAIGSEKRLKIFFSSADGYHLIDAESFVMSDVTLPKNPLEIIPQNIILPDCITGMM	240

Fig. 3F

ZC504.4_ce
 NIK_m
 ZC1_h
 ZC2_h
 ZC3_h
 ZC4_h

L	C	Y	D	N	E	G	V	Y	V	N	T	Y	G	R	M	T	K	I	N	V	V	L	Q	W	G	E	M	P	S	S	V	A	Y	I	S	T	G	Q	I	M	G	W	G	N	K	A	I	E	I	R	S	V	D	T	G	H	L	D	G	V
V	C	Y	E	D	E	G	V	Y	V	N	T	Y	G	R	I	T	K	D	V	V	L	Q	W	G	E	M	P	T	S	V	A	Y	I	R	S	N	Q	T	I	M	G	W	G	E	K	A	I	E	I	R	S	V	E	T	G	H	L	D	G	V
V	C	Y	E	D	E	G	V	Y	V	N	T	Y	G	R	I	T	K	D	V	V	L	Q	W	G	E	M	P	T	S	V	A	Y	I	R	S	N	Q	T	I	M	G	W	G	E	K	A	I	E	I	R	S	V	E	T	G	H	L	D	G	V
V	C	Y	E	D	E	G	V	Y	V	N	T	Y	G	R	I	T	K	D	V	V	L	Q	W	G	E	M	P	T	S	V	A	Y	I	H	S	N	Q	I	M	G	W	G	E	K	A	I	E	I	R	S	V	E	T	G	H	L	D	G	V	
L	C	Y	E	D	E	G	V	Y	V	N	T	Y	G	R	I	T	K	D	V	V	L	Q	W	G	E	M	P	T	S	V	A	Y	I	C	S	N	Q	I	M	G	W	G	E	K	A	I	E	I	R	S	V	E	T	G	H	L	D	G	V	
L	T	F	N	A	E	A	L	S	V	E	A	N	E	Q	L	F	K	K	I	L	E	M	M	K	D	I	P	S	S	I	A	F	E	C	T	D	R	T	T	G	W	G	Q	K	A	I	E	V	R	S	L	Q	S	R	V	L	E	S	E	

1064
1188
1194
1252
1281
300

ZC504.4_ce
 NIK_m
 ZC1_h
 ZC2_h
 ZC3_h
 ZC4_h

F	M	H	K	K	A	Q	K	L	K	F	L	C	E	R	N	D	K	V	F	F	S	S	A	K	G	G	S	C	Q	I	Y	F	M	T	L	N	K	P	G	L	T	N	W					
F	M	H	K	R	A	Q	R	L	K	F	L	C	G	R	N	D	K	V	F	F	S	S	V	R	S	G	G	S	S	Q	V	Y	F	M	T	L	G	R	T	S	L	L	S	W				
F	M	H	K	R	A	Q	R	L	K	F	L	C	E	R	N	D	K	V	F	F	S	S	V	R	S	G	G	S	S	Q	V	Y	F	M	T	L	G	R	T	S	L	L	S	W				
F	M	H	K	R	A	Q	R	L	K	F	L	C	E	R	N	D	K	V	F	F	S	S	V	R	S	G	G	S	S	Q	V	F	F	M	T	L	N	R	N	S	M	M	N	W				
F	M	H	K	R	A	Q	R	L	K	F	L	C	E	R	N	D	K	V	F	F	S	S	V	R	S	G	G	S	S	Q	V	Y	F	M	T	L	N	R	N	R	I	M	N	W				
L	K	R	R	S	I	K	K	L	R	F	L	C	T	R	G	D	K	L	F	F	T	S	T	L	R	N	H	H	S	R	V	Y	F	M	T	L	G	K	L	E	E	L	Q	S	N	Y	D	V

1109
1233
1239
1297
1326
349

Fig. 3G

Title: PAK5 SCREENING
 METHODS
 Inventor(s): Gregory PLOWMAN
 et al.
 Attorney Docket No.: 034536-0688

Attorney Docket No.: 034536-0688

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Fig. 4A

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Fig. 4B

KHS1_h	664	FDFPLPSP	NVFEMLV	IPEQYPMV	CVAISKGTES	NQVVQFETI	NLSASSWFTE	IGAGS	723
KHS2_h	714	IDFPIPC	LRFEMLV	VVPEQEYPL	VCVGVSRRGRD	FNQVVRFE	TVPNPSTSSW	FTE--SDT	771

724 QQLDSIHVTQLERDTVLVCLDKFVKIVNLQGKLSKKLASSELSFDFRIESVVC LQDSVL 783
KHS1_h

772 PQTNVTHVTQLERDTILVCLDCCIKIVNLQGRLLKSSRKLSSSELTFFDFQIESIVCLQDSVL 831
KHS2_h

KHS1_h	784	A F W K H G M Q G K S F K S D E V T Q E I S D E T R V F R L L G S D R V V V L E S R P T E N P T A H S N L Y I L A G H E	843
KHS2_h	832	A F W K H G N Q G R S F R S N E V T Q E I S D S T R I F R L L G S D R V V V L E S R P T D N P T A N S N L Y I L A G H E	891

KHS1_h	844	N S Y	***	846
KHS2_h	892	N S Y	***	894

Fig. 4C

Title: PAK5 SCREENING METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

SULU_ce	L I Q R T K N M V L E L D N F Q Y K K M R K L M Y L D E T E G K E G S E G N G A S D D L D F H G N E A N S I G R A G D S	360
SULU1_h	L I Q R T K D A V R E L D N L Q Y R K M K K I L F	- 313
SULU3_m	L I Q R T K D A V R E L D N L Q Y R K M K K L L F	- 309
SULU3_h	L I Q R T K D A V R E L D N L O Y R K M K K L L F	- 103

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SULU_ce ASSRSASLT SFRSMQSSGGAGLLVSTNTTGAMDNVHGS SSGYNGSSSTSSARRRRPPPIPS 420
SULU1_h ----- QETRNGLNE S 324
SULU3_m ----- QEAHNGPAVEA 320
SULU3_h ----- QEAHNGPAVEA 114

SULU_ce QMLSSSTSTSGVG TMP SHGS V G A S I T A I A V N P T S P S E P I P T S Q P T S K S E S S - S I L E T A H D 479
SULU1_h Q E D E E D S E H G T S L N R E M D S L G S N H S I P S M S V S T G S Q S S S V N S M Q E V M D E S S E L V M M H D D 384
SULU3_m Q E E E E E Q D H G V G R T G T V N S V G S N Q S I P S M S I S A S S Q S S S V N S L P D A S D D K S - E L D M M E G D 379
SULU3_h Q E E E E E Q D H G V G R T G T V N S V G S N Q S I P S M S I S A S S Q S S S V N S L P D V S D D K S - E L D M M E G D 173

SULU_ce DPLDTSI ----- R A P V K D L H M P H R A V K E R I A T L Q N H K F A T L R S Q R I I 521
SULU1_h E S T I N S S S V V H K K D H V F T R D E A G H G D P R P E P R P T Q S V Q S Q A L H Y R N R E R F A T I K S A S L V 444
SULU3_m H T V M S N S S V I H L K P E E E N Y Q E E G D P R T R A S D P P Q S P P Q V S R H K S H Y R N R E H F A T I R T A S L V 439
SULU3_h H T V M S N S S V I H L K P E E E N Y R E E G D P R T R A S D P P Q S P P Q V S R H K S H Y R N R E H F A T I R T A S L V 233

SULU_ce N Q E Q E E Y T K E N N M Y E Q M S K Y K H L R Q A H H K E L Q Q F E E R C A L D R E Q L R V K M D R E L E Q L T T T Y 581
SULU1_h T R Q I H E H E Q E N E L R E Q M S G Y K R M R R R Q H Q K Q L I A L E N K L K A E M D E H R L K L Q K E V E T H A N N S 504
SULU3_m T R Q M Q E H E Q D S E L R E Q M S G Y K R M R R R Q H Q K Q L M T L E N K L K A E M D E H R L R L D K D L E T Q R N N F 499
SULU3_h T R Q M Q E H E Q D S E L R E Q M S G Y K R M R R R Q H Q K Q L M T L E N K L K A E M D E H R L R L D K D L E T C R N N F 293

SULU_ce S K E K M R V R C S Q N N E L D K R K K D I E D G E K K M K K T K N S Q N Q Q M K L Y S A Q Q L K E Y K Y N K E A Q K 641
SULU1_h S I E L E K L A K K Q V A I I E K E A K V A A A D E K K F Q Q Q I L A Q Q K K D L T T F L E S Q K K Q Y K I C K E K I K 564
SULU3_m A A E M E K L I K K H Q A A M E K E A K V M A N E E K K F Q Q H I Q A Q Q K K E L N S F L E S Q K R E Y K L R K E Q L K 559
SULU3_h A A E M E K L I K K H Q A A M E K E A K V M S N E E K K F Q Q H I Q A Q Q K K E L N S F L E S Q K R E Y K L R K E Q L K 353

Fig. 5B

SULU_ce TR L R S L N M - P R S T Y E N A M K E V K A D L N R V K D A R E N D F D E K L R A E L E D E I V R Y R R Q Q L S N L H 700
SULU1_h E E M N E D H S T P K K E K Q E R I S K H K E N L Q H T Q A E E E A H L L T Q Q R L Y Y D K N C R F F K R K I M I K R H 624
SULU3_m E E L N E N Q S T P K K E K Q E W L S K Q K E N I Q H F Q A E E E A N L L R R Q R Q Q Y L E L E C R R F K R M L L G R H 619
SULU3_h E E L N E N Q S T P K K E K Q E W L S K Q K E N I Q H F Q A E E E A N L L R R Q R Q Q Y L E L E C R R F K R M L L G R H 413

SULU_ce Q L E E Q L D D E D V N V Q E R Q M D T R H G L L S K Q H E M T R D L E I Q H L N E L H A M K K R H L E T Q H E A E S A 760
SULU1_h E V E Q Q N I R E E L N K K R T Q K E M E H A M L I R H D E S T R E L E Y R Q L H T L Q K L R M D L I R L Q H Q T E L E 684
SULU3_m N L E Q D L V R E E L N K R Q T Q K D L E H A M L L R Q H E S M Q E L E F R H L N T I Q K M R C E L I R L Q H Q T E L T 679
SULU3_h N L E Q D L V R E E L N K R Q T Q K D L E H A M L L R Q H E S M Q E L E F R H L N T I Q K M R C E L I R L Q H Q T E L T 473

SULU_ce S Q N E Y T Q R Q Q D E L R K K H A M S R Q Q P R D L K I Q E A Q I R K Q Y R Q V V K I T Q T R Q F K L Y L T Q M V Q V 820
SULU1_h N Q L E Y N K R R E R E L H R K K H V M G L R Q Q P K N L K A M E M Q I K K Q F Q D T C K V Q T K Q Y K A L K N H Q L E V 744
SULU3_m N Q L E Y N K R R E R E L R R K K H V M E V R Q Q P K S L K S K E L Q I K K Q F Q D T C K I Q T R Q Y K A L R N H L L E T 739
SULU3_h N Q L E Y N K R R E R E L R R K K H V M E V R Q Q P K S L K S K E L Q I K K Q F Q D T C K I Q T R Q Y K A L R N H L L E T 533

SULU_ce V P K D E Q K E L T S R L K Q D Q M Q K V A L L A S Q Y E S Q I K K M V Q D K T V K L E S W Q E D E Q R V L S E K L E K 880
SULU1_h T P K N E H K T I L K T L K D E Q T R K L A I L A E Q Y E Q S I N E M M A S Q A L R L D E A Q E A E C Q A L R L Q L Q Q 804
SULU3_m T P K N E H K A I
SULU3_h T P K S E H K A V L K R L K E E Q T R K L A I L A E Q Y D H S I N E M L S T Q A L R L D E A Q E A E C Q V L K M Q L Q Q 748 593

SULU_ce E L E E L I A Y Q K K T R A T L E E Q I K K E R T A L E E R I G T R R A M L E Q K I I E E R E Q M G E M R R L K K E Q I 940
SULU1_h E M E L L N A Y Q S K I K M Q T E A Q H E R E L Q K L E Q R V S I R R A H L E Q K I E E E L A A L Q K E R S E R I K N L 864
SULU3_h E L E L L N A Y Q S K I K M Q A E A Q H D R E L R E L E Q R V S I R R A L L E Q K I E E E M L A L Q N E R T E R I R S L 653

Fig. 5C

SULU_ce	RDRHSQERHRLLENHFVRTG	STSRSSGGIAPGVGNSSSIQMAM	982
SULU1_h	LERQEREIETFDMESLRMG	FGNLTLDFFPKEDYR	898
SULU3_h	LERQAREIEAFDSESMRLG	FSNMVLSNLSPEAFSHSYPGASGWSHNPTGGPGPHWGHPMG	713
SULU3_h	GPPQAWGHPMQGGPPQWGHPSGPMQGVPRGSSMGVRN	SPQALRRRTASGGRT	EQGMSRSTS 773
SULU3_h	VTSQISNGSHMSYT		787

Fig. 5D

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Fig. 6A

METHODS

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	660	KKEVKSEVEKLPRQQRKESMKQMEEHSQKKQRLDRDFVAKQKEDLEAMRKLT	TTE	NNRRE	719
LOK_m					
	661	KKEVKNEVEKLPRQQRKESMKQMEEHTQKKQLLDRDFVAKQKEDLEAMKRLT	TDN	RRE	720
GEK2_h					

Fig. 6B

LOK_m	720	ICDKERDCLSKKQELLRDREAALWEMEEHQLQERHQLVKQQLKDQYFLQRHDLRLRKHEKE	779
GEK2_h	721	ICDKEREC LMKKQELLRDREAALWEMEEHQLQERHQLVKQQLKDQYFLQRHELRLRKHEKE	780
LOK_m	780	REQMQRYNQRMMEQLKVRQQQEKKARLPKIQRS DGETRMAMYKKS LHINGAGSASEQREKI	839
GEK2_h	781	REQMQRYNQRMIEQLKVRQQQEKKARLPKIQRS EGKTRMAMYKKS LHINGGSAAEQREKI	840
LOK_m	840	KQFSQQE EK RQKAERLQQQKQKHEHQMRDMVAQCESNMSELQQ LQNEKCYLLVEHETQK LK	899
GEK2_h	841	KQFSQQE EK RQKSERLQQQKQKHENQMRDMLAQCESNMSELQQ LQNEKCHLLVEHETQK LK	900
LOK_m	900	ALDESHNQSLKE	911
GEK2_h	901	ALDESHNQNLKE	912

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Fig. 6C

Title: PAK5 SCREENING METHODS
Inventor(s): Gregory PLOWMAN et al.
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PAK1_h	MSNGLDIQDKPPAPPMRNTSTMIGAGSKDAGTL	NHGS	KPLPPN	PEEK	KKKDRFYRSIL	- 59																																						
PAK65_h	MEETQKSHLELSA	- - - - -	NHSL	KPLPSV	PEEK	KPRHKIISIFS - 40																																						
PAK3_m	-MSDSL DNEEKPPAPPLR	- - - - -	MNSNRDSSAL	NHSS	KPLPMA	PEEK	NKKARLSIFPG 54																																					
PAK1_h	PGDK	TNKKKEKERPEIS	LP	SDFEHTI	HVGFD	A	VTGEFT	GM	PEQ	WARLL	QTSNIT	KS	- - - - - 115																															
PAK65_h	GTEK	GSKKKEKERPEIS	PP	SDFEHTI	HVGFD	T	VTGEFT	GM	PEQ	WARLL	QTSNIT	KL	- - - - - 96																															
PAK3_m	GGDK	TNKKKEKERPEIS	LP	SDFEHTI	HVGFD	A	VTGEFT	GI	PEQ	WARLL	QTSNIT	KL	- - - - - 110																															
PAK4_h	- - - - -	MFR	KKKKRPEIS	AP	QN	FQ	H	R	V	H	T	S	F	D	P	K	E	G	K	E	F	V	G	L	P	Q	W	Q	N	I	L	D	T	L	R	R	P	K	P	V	V	D	P	56
PAK1_h	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 115																															
PAK65_h	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 96																																
PAK3_m	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 110																																
PAK4_h	SRITRVQLQPMKTVVRGSAMPVDGYISGLLNDIQKLSVSSNTLRGRSPTSRRRAQSLGL	116																																										
PAK1_h	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 115																																
PAK65_h	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 96																																
PAK3_m	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 110																																
PAK4_h	LGDEHWATDPDMYLQSPQSERTDPHGLYLS	CN	GGTPAGHKQMPWPEPQSPRVLPNGLAAK	176																																								
PAK1_h	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 127																																
PAK65_h	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 108																																
PAK3_m	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - - 122																																
PAK4_h	AQSLGPAEFQGASQRCLQLGACLQSSPPGASPTGTNRHGMKA	A	KH	GSE	E	ARPQ	S	C	L	V	G	S	236																															

Fig. 7A

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Fig. 7C

SEQ ID NO: 5 STLK2 human Nterm=1-21 kin=22-274
Cterm=275-416

MAHSPVAVQVPGMQNNIADPEELFTKLERIGKGSFGEVFKGIDNRTQQVVAIKIIDLEEA
EDEIEDIQQEITVLSQCDSSYVTKYYGSYLKGSKLWIIMEYLGGSALDLLRAGPFDEFQ
IATMLKEILKGLDYLHSEKKIHRDIKAANVLLSEQGDVKLADFGVAGQLTDTQIKRNTFV
GTPFWMAPEVIQQSAYDSKADIWSLGITAIELAKGEPNSDMHPMRVLFILPKNNPPTLV
GDFTKSFKEFIDACLNKDPSFRPTAKELLKHKFIVKNSKTSYLTTELIDRFKRWKAEGHS
DDES DSEGS DSEST SRENTHPEWSFTTVRKKPDPKKVQNGAEQDLVQTLSCLSMIITPA
FAELKQQDENNASRNQAIEELEKSI AVAEAAACPGITDKMVKKLIEKFQKCSADESP

SEQ ID NO: 6 STLK3 human Nterm=1-31 kin=32-308 Cterm=309-489
(insert=327-352) tail=490-516

TAAPAPAAPAAPAPAPAPAPAAQAVGWPICRDAYELQEVI GSGATAVVQAALCKPRQERV
AIKRINLEKCQTSMDLLKEIQAMSQC SHPNVVTTYTSFVVKDELWLV MKLLSGGSMLDI
IKYIVNRGEHKNVLEEAIITILKEVLEGLDYLHRNGQIHRDLKAGNILLGEDGSVQIA
DFGVSAFLATGGDVTRNKVRKTFVGTPCWMAPEVMEQVRGYDFKADMWSFGITAIELATG
AAPYHKYPPMKVLM LTLQNDPPTLETGVEDKEMMKKYGKSFRKLLSLCLQKDPSKRPTAA
ELLKCKFFQKAKNREYLIEKLLTRTPDIAQRAKKVRRVPGSSGHLHKTEDGDWEWSDDDEM
DEKSEEGKAAFSQEKSRVKEENPEIAVSASTIPEQIQSLSVHDSQGPPNANEDYREASS
CAVNLVLRRLNSRKELNDIRFEFTPGRDTADGVSQELFSAGLVDGHDVVIVAANLQKIVD
DPKALKTLTFKLASGCDGSEIPDEVKLIGFAQLSVS

SEQ ID NO: 7 STLK4 human Nterm=absent, kin=1-178, Ctail=179-414,
insert1=198-222, insert2=253-293

KSGVLDXSTIATILREVLEGL EYLHKXGQIHRDVKAGNILXGEDGSVQIADFGVSAFLAT
GGDITRNKVRKTFVGTPCWMAPEVMEQVRGYDFKADIWSFGITAIELATGAAPYHKYPPM
KVLMLTLQNDPPSLETGVQDKEMLK KYGKSFRKMISLCLQKDPEKRPTAAELLRHKFFQK
AKNKEFLQEKT LQRAPTISERAKK VRRVPGSSGRLHKTEDGGWEWSDDDEFDEESEEGKAA
ISQLRSPRVKESISNSELPPTTDPVGTLLQVPEQISAHLPQPAGQIATQPTQVSLPPTAE
PAKTAQALSSGSGSQETKIPISLVRLRLNSKKELNDIRFEFTPGRDTAEGVSQELISAGL
VDGRDLVIVAANLQKIVEEPQSNRSVTFKLASGVEGSDIPDDGKLIGFAQLSIS

SEQ ID NO: 8 STLK5 human Nterm=absent, kin=1-222(lacks N-term),
Ctail=224-274

LICTHFMDGMNELAIAYILQGV LKALDYIHHMGYVHRSVKASHILISVDGKVYLSGLRSN
LSMISHGQRQRVVHDFPKYSVKVLPWLSPEVLQQNLQGYDAKSDIYSVGITACELANGHV
PFKDMPATQMLLEKLN GTVPCLLDTSTIPAEELTMSPSRSVANSGLSDSLTTSTPRPSNG
DSPSHPHYHRTFSPHFHHFVEQCLQRNP DARPSASTLLNHSFFKQIKRRASEALPELLRPV

Fig. 8A
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TPITNFEQSQSDHSGIFGLVTNLEELEVDDWEF

SEQ ID NO: 13 ZC1 human 1/5/98 Nterm=1-22 kin=23-289

coiled-coil=290-526 pro=527-640 B=641-896 Rab/Rac-BD=897-1239

MANDSPAKSLVDIDLSSLRDPAGIFELVEVVGNGTYGQVYKGRHVKTGQLAAIKVMDVTE
DEEEEIKLEINMLKKYSHHRNIATYYGAFIKKSPPGHDDQLWLVMFCGAGSITDLVKNT
KGNTLKEDWIAYSISREILRGLAHLHIHHVIHRDIKGQNVLLTENAEVKLVDFGVSAQLDR
TVGRRNTFIGTPYWMAPEVIACDENPDATYDYRSDLWSCGITAIEAEGAPPLCDMHPMR
ALFLIPRNPPLRLKSKKWSKKFFSFIEGCLVKNYMQRPEQQLLKHPFIRDQPNERQVRI
QLKDHIDRTRKKRGEKDETEYEYSGSEEEEEVPEQEGEPSSIVNVPGESTLRRDFLRLQ
QENKERSEALRRQQLLEQQLREQEEYKRQLLAERQKRIEQQKEQRRRLEEQQRREREAR
RQQEREQRRREQEEKRRLEELERRRKEEEEERRRAEEEKRRVEREQEYIRRQLEEEQRHLE
VLQQQLLEQAMLLRCRWREMEHRQAERLQRQLQEQAYLLSLQHDHRRPHPQHSQQPP
PPQQERSKPSFHAPEPKAHYEPADRAREVEDRFRKTNHSSPEAQSKQTGRVLEPPVPSRS
ESFSNGNSESVHPALQRPAEPQVPVRTTSRSPVLSRRDSPLQGGSGQQNSQAGQRNSTSIE
PRLWERVEKLVPRPGSGSSSGSSNSGSQPGSHPGSQSGSGERFRVRSSSKSEGSPSQRL
ENAVKKPEDKKEVFRPLKPADLTALAKELRAVEDVRPPHKVTDYSSSSSEESGTTDEEDDD
VEQEGADESTSGPEDTRAASSLNLSNGETESVKTMIHDDVESEPAMTPSKEGTLIVRRT
QSASSTLQKHKSSSSFTPFIDPRLQLISPSSGTTVTSVVGFSCDGMPEAIRQDPTRKGS
VVNVNPTNTRPQSDTPEIRKYKKRFNSEILCAALWGVNLLVGTESGLMLLDRSGQGKVYP
LINRRRFQQMDVLEGLNVLVTISGKKDKLRVYYLSWLRNKILHNDPEVEKKQGWTTVGD
EGCVHYKVVKYERIKFLVIALKSSVEVYAWAPKPYHKFMAFKSFGELVHKPLLVDLTVEE
GQRLKVIYGCAGFHAVDVGSGSVYDIYLPTHIQCSIKPHAIILPNTDGMELLVCYEDE
GVYVNTYGRITKDVVLQWGEMPTSVAYIRSNQTMGWGEKAIEIRSVETGHLGDFVFMHKRA
QRLKFLCERNDKVFFASVRSGGSSQVYFMTLGRTSLLSW

SEQ ID NO: 14 ZC2 human Nterm=missing kin=1-255 coiled-coil=256-442
pro=443-626 B=627-954 Rab/RacBD=955-1297

AFGEVYEGRHVKTGQLAAIKVMDVTGDEEEEIKQEIINMLKKYSHHRNIATYYGAFIKKNP
PGMDDQLWLVMFCGAGSVTDLIKNTKGNTLKEEWIAYICREILRGLSHLHQHKVIHRDI
KGQNVLLTENAEVKLVDFGVSAQLDRTVGRRNTFIGTPYWMAPEVIACDENPDATYDFKS
DLWSLGITAIEAEGAPPLCDMHPMRALFLIPRNPAPRLKSKKWSKKFQSFIESCLVKNH
SQRPAEQMLMKHPFIRDQPNERQVRIQLKDHIDRTRKKRGEKDETEYEYSGSEEEEEEND
SGEPSSILNLPRESTLRRDFLRLQLANKERSEALRRQQLLEQQQRENEEHKRQLLAERQKR
IEEQKEQRRRLEEQQRREKELRKQQEREQRRHYEEQMRREEERRRAEHEQEYKRKQLEEQ
RQAERLQRQLKQERDYLVSQHQREQRQRPVEKKPLYHYKEGMSPSEKPAWAKEVEEERSRL
NRQSSPAMPHKVANRISDPNLPPRSESFISGVQPARTPPMLRPVDPQIPHLVAVKSQGP
ALTASQSVHEQPTKGLSGFQEALNVTSHRVEMPRQNSDPTSENPLPTRIEKFDRSSWLR

Fig. 8B
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Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

QEEDI PPKV PQR TTSISP ALARKNSP GNGSALGPRLGSQPIRASNPDLRRTEPILESPLQ
RTSSGSSSSSSSTPSSQPSQGGSQPGSQAGSSERTRVRANSKSEGSPVLPHEPAKV KPEE
SRDITRPSRPASYKKAIDEDLTALAKELRELRIEETNRPMKKVTDYSSSSSEESSESESEEE
EDGESETHDGTVAVSDIPRLIPTGAPGSNEQYNVGMVGTHGLETSHADSFSGSISREGTL
MIRETSGEKKRSGHSDSNGFAGHINLPDLVQQSHSPAGTPTEGLGRVSTHSQEMDSGTEY
GMGSSTKASFTPFVDPRVYQTSPTDEDEDEEESAAALFTGELLRQEQA KLNEARKISV
NVNPTNIRPHSDTPEIRKYKKRFNSEILCAALWGVNLLVGTENGLMLLDRSGQGKVYNLI
NRRRFQQMDVLEGLNVLVLTISGKKNKLRVYYLSWLRNRILHNDPEVEKKQGWITVGDLEG
CIHYKVVKYERIKFLVIALKNAVEIYAWAPKPYHKFMAFKSFADLQHKPLLVDLTVEEGQ
RLKVIFGSHTGFHVIDVDSGNSYDIYTPSHIQGNITPHAIVILPKTDGMEMLVCYEDEGV
YVNTYGRITKDVVLQWGEMPTSVAYIHSNQIMGWGEKAIEIRSVETGHLDGVFMHKRAQR
LKFLCERN DKVFFASVRSGGSSQVFFMTLNRNSMMNW

SEQ ID NO: 15 ZC3 human kin=1-255 coiled-coil=256-476 pro=477-680
B=681-983 Rab/RacBD =984-1326

AFGEVYEGRHVKTGQLAAIKVMDVTEDEEEEEKQEINMLKKYSHHRNIATYYGAFIKKSP
PGNDDQLWLVMFCGAGSVTDLVKNTKGNALKEDCIAYICREILRGLAHLHAHKVIHRDI
KGQNVLLTENAEVKLVDFGVSAQLDRTVGRRNTFIGTPYWMAPEVIACDENPDATYDYS
DIWSLGITAIEMAEGAPPLCDMHPMRALFLIPRNPPLRLKSKKWSKKFIDFIDTCLIKTY
LSRPPTEQLLKFPFIRDQPTERQVRIQLKDHIDRSRKKRGEKEETEY EYSGSEEEEDDSHG
EEGEPSSIMNVPGESTLRREFLRLQQENKSNSEALKQQQQQLQQQQQQRDPEAHIKHLLHQR
QRRIEEQKEERRRVEEQRRREREQRKLQEKEQRRLED MQALRREEERRQAEREQEYIRH
RLEEEQRQLEILQQQLLQEQALLLEYKRKQLEEQRQSERLQRQLQQEHAYLKS LQQQQQQ
QQQLKQKQQQQQLLPGDRKPLYHYGRGMNPADKPAWAREVEERTRMNKQQNSPLAKSKPGST
GPEPPIPQASPGPPGPLSQTPPMQRPVEPQEGPHKSLVAHRVPLKPYAAPVPRSQSLQDQ
PTRNLAAFPASHDPDPAIPAPTATPSARGAVIRQNSDPTSEGGPSPNPPAWVRPDNEAP
PKVPQRTSSIATALNTSGAGGSRPAQAVRARPRSNSAWQIYLQRRRAERGTPKPPGPPAQP
PGPPNASSNPDLRRSDPGWERSDSVLPASHGHL PQAGSLERNRVGVSSKPDSSPVLSPGN
KAKPDDHRSRPGRPADFVLLKERTLDEAPRPPKKAMDYSSSSSEEVESSEDEEEEGEGGPA
EGSRDTPGGRDGD TDSVSTMVVHDVEEITGTQPPYGGGT MVVQRTPEEERNLLHADSNGY
TNLPDVVQPSHSPTENSKGQSPPSKDGSGDYQSRGLVKAPGKSSFTMFVDLGIYQPGGSG
DSIPITALVGGEGTRLDQLQYDVRKGSVVNVNPTNTRAHSETPEIRKYKKRFNSEILCAA
LWGVNLLVGTENGLMLLDRSGQGKVYGLIGRRRFQQMDVLEGLNLLITISGKR NKLRVYY
LSWLRNKILHNDPEVEKKQGWTTVGDMEGCGHYRVVKYERIKFLVIALKSSVEVYAWAPK
PYHKFMAFKSFADLPHRPLLVDLTVEEGQRLKVIYGSSAGFHAVDVDSGNSYDIYIPVHI
QSQITPHAIIFLPNTDGMEMLLCYEDEGVYVNTYGRIIKDVVLQWGEMPTSVAYICSNQI
MGWGEKAIEIRSVETGHLDGVFMHKRAQR LKFLCERN DKVFFASVRSGGSSQVYFMTLNR
NRIMNW

Fig. 8C
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Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

SEQ ID NO: 16 ZC4 human Nterm kin coiled-coil pro B=missing
Rab/RacBD=1-349

NVNPLYVSPACKKPLIHMYEKEFTSEICCGSLWGVNLLLGTRSNLYLMDRSGKADITKLI
RRRPFRQIQVLEPLNLLITISGHKNRLRVYHLTWLRNKILNNDPESKRRQEEMLKTEEAC
KAIDKLTGCEHFSVLQHEETTYIAIALKSSIHLYAWAPKSFDESTAIKVFTLDHKPVTV
DLAIGSEKRLKIFFSSADGYHLIDAEESEVMSDVTLPKNPLEIIIPQNIILPDCLGIGMM
LTFNAEALSVEANEQLFKKILEMWKDIPSSIAFECTQRTTGWGQKAIEVRSLSQSRVLESE
LKRRSIKKLRFLCTRGDKLFFTSTLRNHHSRVYFMTLGKLEELQSNYDV

SEQ ID NO: 18 KHS2 human Nterm=1-13 kin=14-273 A=274-346
Pro=347-534 RabBD =535-894

MNPGFDLSRRNPQEDFELIQRIGSGTYGDVYKARNVNTGELAAIKVIKLEPGEDFAVVQQ
EIIMMKDCKHPNIVAYFGSYLRDKLWICMEFCGGGSLQDIYHVTGPLSELQIAYVSRET
LQGLYYLHSGKGMHRDIKGANILLTDNGHVKLADFGVSAQITATIAKRKSFITPYWMAPE
EVAVERKGGYNQLCDLWAVGITAIELAEQPPMFDLHPMRALFLMTKSNFQPPKLKDKM
KWSNSFHHFVKMALTKNPKKRPTAEKLLQHPFVTQHLTRSLAIELLDKVNNDPHSTYHDF
DDDDPEPLVAVPHRIHSTSRNVREEKTRSEITFGQVKFDPPLRKETEPHHELPDSDGFLD
SSEIYYTARSNLDLQLEYGQGHQGGYFLGANKSLLKSVEEELHQRGHVAHLEDDEGDDD
ESKHSTLKAKIPPLPPPKPSIFIPQEMHSTEDENQGTIKRCPSMSGSPAKPSQVPPRPPP
PRLPPHKPVALGNGMSSFQLN GERDGS LCQQQNEHRGTNLSRKEKKDVPKPI SNGLPPTP
KVHMGACFSKVFNGCPLKIHCASSWINPDTRDQYLIFGAEEGIYTLNLNELHETSMEQLF
PRRCTWLYVMNNCLLSISGKASQLYSHNLPGLFDYARQMQLPVAIPAHKLPDRILPRKF
SVSAKIPETKWCQKCCVVRNPYTGHKYL GALQTSIVLLEWVEPMQKFMLIKHIDFPIPC
PLRMFEMLVVPEQEYPLVCVGVSRGRDFNQVVRFETVNPNSTSSWFTESDTPQTNVTHVT
QLERDTILVCLDCCIKIVNLQGR LKSSRKLSS ELTFDFQIESIVCLQDSVLAFWKHGMQG
RSFRSNEVTQEISDSTRIFRLLGSDRVV VLES RPTDNPTANSNLYILAGHENSY

SEQ ID NO: 22 SULU1 human N=1-21 kin=22-277 A=278-427
coiled-coil1=428-637 B=638-751 coiled-coil2=752-898

MRKGV LKDP EIDDLFYKDDPEELFIGLHEIGHGSFGAVYFATNAHTNEVVAIKKMSYSGK
QTHEKWQDILKEVKFLRQLKHPNTIEYKGCYLKEHTAWLVM EYCLGSASDLLEVHKKPLQ
EVEIAAITHGALHGLAYLHSHALIH RDIKAGNILLTEPGQVKLADFGSASMASPANSFVG
TPYWMAPEVILAMDEGQYDGKVDIWSLGITCIELAERKPPLFNMNAMSALYHIAQNDSPT
LQSNEWTD SFRRFVDYCLQKIPQERPTSAELLRHDFVRRDRPLRVLIDLIQRTKDAVREL
DNLQYRKMKKILFQETRNGPLNESQEDEEDSEHGTS LNREMDSLGSNHSIPSMSVSTGSQ
SSSVNSMQEVMDESSSELVMMHDESTINSSSSSVVHKKDHFVTRDEAGHGDP RPEPRPTQ
SVQS QALHYRNRERFATIKSASLVTRQIHEHEQENELREQMSGYKRMRRQHQQQLIALEN
KLKAEMDEHRLKLQKEVETHANNSSIELEKLAKKQVAIIEKEAKVAAADEKKFQQQILAQ

Fig. 8D
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METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

QKKDLTTFLESQKKQYKICKEKIKEEMNEDHSTPKKEKQERISKHKENLQHTQAEAAHL
LTQQRLYYDKNCRFFKRKIMIKRHEVEQQNIREELNKKRTQKEMEAMLRHDESTRELE
YRQLHTLQKLRLMDLIRLQHQTLELQLEYNKRRERELHRKHVMGLRQQPKNLKAMEMQIK
KQFQDTCKVQTKQYKALKNHQLEVTPKNEHKTILKTLKDEQTRKLAILAEQYEQSINEMM
ASQALRLDEAQEAECQALRLQLQQEMELNAYQSKIKMQTEAQHERELQKLEQRVSLRRA
HLEQKIEEELAALQKERSERIKNLLERQEREIETFDMESLRMGFGNLVTLDFPKEDYR

SEQ ID NO: 23 SULU3 human Nterm=missing kin partial=1-66 A=67-215
coiled-coil1=216-425 B=426-539 coiled-coil2=540-786 Ctail=687-786
IELAERKPPLFNMNAMSALYHIAQNESPTLQSNESDYFRNFVDSCLQKIPQDRPTSEEL
LKHIFVLRERPETVLIDLIQRTKDAVRELDNLQYRKMKKLLFQEAHNGPAVEAQEEEEEQ
DHGVGRTGTVNSVGSNQSIPSMSISASSQSSSVNSLPDVSDDKSELDMMEGDHTVMSNSS
VIHLKPEEENYREEGDPRTASDPQSPQVSRHKSHYRNREHFATIRTSASLVTRQMQEHE
QDSELREQMSGYKRMRRQHQQKQMTLENKLKAEMDEHRLRLDKDLETQRNNFAAEMEKL
KKHQAAMEKEAKVMSNEEKKFQQHIQAQQKKELNSFLESQKREYKLRKEQLKEELNENQS
TPKKEKQEWLSKQKENIQHFQAEAAANLLRRQRQYLELECRRFKRRMLLGRHNLEQDLVR
EELNKRQTQKDLEHAMLLRQHESMQELEFRHLNTIQKMRCELIRLQHQTLELQLEYNKR
RERELRRKHVMEVRQQPKSLKSKELQIKKQFQDTCKIQTRQYKALRNHLETTTPKSEHKA
VLKRLKEEQTRKLAILAEQYDHSINEMLSTQALRLDEAQEAECQVLKMQLELELLNAY
QSKIKMQAEQAHDRELRELEQRVSLRRALLEQKIEEEMLALQNERTERIRSLLERQAREI
EAFDSESMRLGFSNMVLSNLSPEAFSHSYPGASGWSHNPTGGPGPHWGHMGGPPQAWGH
PMQGGPQPWGHPSGPMQGVPRGSSMGVRNSPQALRRASGGRTAQGMSRSTSVTSQISNG
SHMSYT

SEQ ID NO: 24 SULU3 murine Nterm=1-25 kin=26-273 A=274-422
cc1=423-632 B=633-748 cc2=missing
MPSTNRAGSLKDPEIAELFFKEDPEKLFTDLREIGHGSFGAVYFARDVRTNEVVAIKKMS
YSGKQSTEKWQDIIKEVKFLQRIKHPNSIEYKGCYLREHTAWLVMYCLGSASDLLEVHK
KPLQEVEIAAITHGALQGLAYLHSHTMIHRDIKAGNILLTEPGQVKLADFGSASMASPAN
SFVGTPTYWMAPEVILAMDEGQYDGKVDVWSLGITCIELAERKPPLFNMNAMSALYHIAQN
ESPTLQSNMNDSCCLQKIPQDRPTSEELLKHMFLVLRERPETVLIDLIQRTKDAVRELDNLQ
YRKMKKLLFQEAHNGPAVEAQEEEEEQDHGVGRTGTVNSVGSNQSIPSMSISASSQSSSV
NSLPDASDDKSELDMMEGDHTVMSNSSVIHLKPEEENYQEEGDPRTASDPQSPQVSRH
KSHYRNREHFATIRTSASLVTRQMQEHEQDSELREQMSGYKRMRRQHQQKQMTLENKLKAE
MDEHRLRLDKDLETQRNNFAAEMEKLKKHQAAMEKEAKVMAEKKFQQHIQAQQKKEL
NSFLESQKREYKLRKEQLKEELNENQSTPKKEKQEWLSKQKENIQHFQAEAAANLLRRQR
QYLELECRRFKRRMLLGRHNLEQDLVREELNKRQTQKDLEHAMLLRQHESMQELEFRHLN
TIQKMRCELIRLQHQTLELQLEYNKRRERELRRKHVMEVRQQPKSLKSKELQIKKQFQD

Fig. 8E
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METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

TCKIQTRQYKALRNHLLLETPKNEHKAI

SEQ ID NO: 26 GEK2 human N=1-33 kin=34-294 A=295-337 B=338-472 215
coiled-coil1=473-724 215 coiled-coil2=725-912

MAFANFRRLRLSTFEKRKSREYEHVRRDLDPNVWEIVGELGDGAFGKVYKAKNKETGA
LAAAKVIETKSEEELEDYIVEIEILATCDHPYIVKLLGAYYHDGKLWIMIEFCPGGAVDA
IMLELDRGLTEPQIQVVCQMLEALNFLHSKRRIHRDLKAGNVLMTLEGDIRLADFGVSA
KNLKTLOKRDSTFIGTPYWMAPEVVMCETMKDTPYDYKADIWSLGITLIEMAQIEPPHHEL
NPMRVLLKIAKSDPPTLLTPSKWSVEFRDFLKIALDKNPETRPSAAQLLEHPFVSSITSN
KALRELVAEAKAEVMEEIEDGRDEGEEDAVDAASTLENHTQNSSEVSPPSLNADKPLEE
SPSTPLAPSQSQDSVNEPCSQPSGDRSLQTTSPVVPAGNENGLAVPVPLRKSRPVSMDA
RIQVAQEKQVAEQGGDLSPAANRSQKASQSRPNSSALETLGGEKLANGSLEPPAQAAPGP
SKRSDSDCSSLCTSESMDYGTNLSTDLSLNKEMGSLSIKDPKLYKKTLLKRTRKFVVDGVEV
SITTSKIISEDEKKDEEMRFLRRQELRELRLLOKEEHRNQTQLSNKHELQLEQMHRFEQ
EINAKKKFFDTELENLERQQKQQVEKMEQDHAVRRREEARRIRLEQDRDYTRFQEQLKLM
KKEVKNEVEKLPRQQRKESMKQKMEEHTQKKQLLDRDFVAKQKEDLELAMKRLTTDNRE
ICDKERECLMKKQELLRDREAALWEMEEHQLQERHQLVKQQLKDQYFLQRHELLRKHEKE
REQMQRYNQRMIEQLKVRQQQEKARLPKIQRSEGKTRMAMYKKS LHINGGGSAAEQREKI
KQFSQQEEKRQKSERLQQQQKHENQMRDMLAQCESNMSELQQLQNEKCHLLVEHETQKLK
ALDESHNQNKE

SEQ ID NO: 29 PAK4 human Rac=1-51 A=52-224 Nterm=225-393
kin=394-658 Ctail=659-681 residues 13-23

(SAPQNFQHRVH)= Cdc42 /Rac-binding motif

MFRKKKKKRPEISAPQNFQHRVHTSFDPKEGKFVGLPPQWQNI LDTLRRPKPVVDPSRIT
RVQLQPMKTVVRGSAMPVDGYISGLLNDIQKLSVISSNTLRGRSPTSRRRAQSLGLLGDE
HWATDPDMYLQSPQSERTPHGLYLSCNGGTPAGHKQMPWPEPQSPRVLPNGLAAKAQSL
GPAEFQGASQRCLQLGACLQSSPPGASPTGTNRHGMKAAKHGSEEARPQSCLVGSATGR
PGGEGSPSPKTRESSLKRRLLFRSMFLSTAATAPPSSSKPGPPPQSKPNSSFRPPQKDNPP
SLVAKAQS LPSDQPVGTFSPLTTSDTSSPQKSLRTAPATGQLPGRSSPAGSPRTWHAQIS
TSNLYLPQDPTVAKGALAGEDTGVTHEQFKAALRMVVDQGDPRLLLD SYVKIGEGSTGI
VCLAREKHSGRQVAVKMMDLRKQQRRELLFNEVVIMRDYQHFNVMYKSYLVGEELWVL
MEFLQGGALTDIVSQVRLNEEQIATVCEAVLQALAYLHAQGV IHRDIKSDSILLTLDGRV
KLSDFGFCAQISKDVPKRKSLVGTPYWMAPEVISRSLYATEVDIWSLGIMVIEMVDGEP
YFSDSPVQAMKRLRDSPPPKLKNSHKVSPVLRDFLERMLVRDPQERATAQELLDHPFLQ
TGLPECLVPLIQLYRKQTSTC

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Inventor(s): Gregory PLOWMAN
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Fig. 8F
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SEQ ID NO: 30 PAK5 human Rac A=missing Nterm partial=1-114
kin=115-379 Ctail=380-398

ASGAKLAAGRPFNTYPRADTDHPSRGAQGEPHDVAPNGPSAGGLAIPQSSSSSSSRPPTRA
RGAPSPGVLGPHASEPQLAPPACTPAAPAVPGPPGPRSPQREPQRVSHEQFRAALQLVVD
PGDPRSYLDNFIKIGEGSTGIVCIATVRSSGKLVAVKKMDLRKQQRRELLFNEVVIMRDY
QHENVVEMYNSYLVGDELWVVMEFLEGGALTDIVTHTRMNEEQIAAVCLAVLQALSVLHA
QGVIHRDIKSDSILLTHDGRVKLSDFGCAQVSKEVPRRKSLVGTPYWMAPELISRLPYG
PEVDIWSLGIMVIEMVDGEPPYFNEPPLKAMKMIRDNLPPRLKNLHKVSPSLKGFLDRLL
VRDPAQRATAAELLKHPFLAKAGPPASIVPLMRQNRTR

Fig. 8G

SEQ ID NO: 1 STLK2 HUMAN

TAACAGCCCACCTCCTAGCCCCGGGCTACGCGCCGCCAGCCCAGTAACCCCCACTTTTGTG
TGTCCTCCCAGGCCCCGATCGAAAAGCCTGGGAGGGCCGCCGAACCTACCCCCGGAGGGAG
GAGCCAGTCCGAACCCAAGGCGCCACCGCCGCAGAAGCGGAGCGAGGCAGCATTTCGCCTC
CATGGCCCCACTCGCCGGTGGGTGTCCAAGTGCCTGGGATGCAGAATAACATAGCTGATCC
AGAAGAAGTGTTCACAAAATTAGAGCGCATTGGGAAAGGCTCATTTGGGGAAGTTTTCAA
AGGAATTGATAACCGTACCCAGCAAGTCGTTGCTATTAAAATCATAGACCTTGAGGAAGC
CGAAGATGAAATAGAAGACATTCAGCAAGAAATAACTGTCTTGAGTCAATGTGACAGCTC
ATATGTAACAAAATACTATGGGTCATATTTAAAGGGGTCTAAATTATGGATAATAATGGA
ATACCTGGGCGGTGGTTCAGCACTGGATCTTCTTCGAGCTGGTCCATTTGATGAGTTCCA
GATTGCTACCATGCTAAAGGAAATTTTAAAAGGTCTGGACTATCTGCATTCAGAAAAGAA
AATTCACCGAGACATAAAAGCTGCCAATGTCTTGCTCTCAGAACAAGGAGATGTTAAACT
TGCTGATTTTGGAGTTGCTGGTCAGCTGACAGATACACAGATTAAAAGAAATACCTTTGT
GGGAACTCCATTTTGGATGGCTCCTGAAGTTATTCAACAGTCAGCTTATGACTCAAAAGC
TGACATTTTGGTCATTGGGAATTACTGCTATTGAACTAGCCAAGGGAGAGCCACCTAACTC
CGATATGCATCCAATGAGAGTTCTGTTTCTTATTCCCAAAAACAATCCTCCAACCTCTTGT
TGGAGACTTTACTAAGTCTTTTAAGGAGTTTATTGATGCTTGCCTGAACAAAGATCCATC
ATTTTCGTCCTACAGCAAAAGAACTTCTGAAACACAAATTCATTGTAAAAAATTCAAAGAA
GACTTCTTATCTGACTGAACTGATAGATCGTTTTAAGAGATGGAAGGCAGAAGGACACAG
TGATGATGAATCTGATTCCGAGGGCTCTGATTCCGGAATCTACCAGCAGGGAAAACAATAC
TCATCCTGAATGGAGCTTTACCACCGTACGAAAGAAGCCTGATCCAAAGAAAGTACAGAA
TGGGGCAGAGCAAGATCTTGTGCAAACCTGAGTTGTTTGTCTATGATAATCACACCTGC
ATTTGCTGAACTTAAACAGCAGGACGAGAATAACGCTAGCAGGAATCAGGCGATTGAAGA
ACTCGAGAAAAGTATTGCTGTGGCTGAAGCCGCCTGTCCCGGCATCACAGATAAAATGGT
GAAGAACTAATTGAAAAATTTCAAAGGTGTTGAGCAGACGAATCCCCCTAAGAACTTA
TTATTGGCTTCTGTTTCATATGGACCCAGAGAGCCCCACCAAACCTACGTCAAGATTAAC
AATGCTTAACCCATGAGCTCCATGTGCCTTTTGGATCTTTGCAACACTGAAGATTTGGAA
GAAGCTATTAACTATTTTGTGATGGCGTTTATCATTTTATATTTTGAAGGATTATTTT
GTAAGGAATAACTTTTAATACTATAGTTTCACCTGTATTCTAGTAAATGTTGAGACACCG
TTTTGCTTTTAAGTATCCCTATTTCTTAAGTTACGAGGATGAATACCTTTTACATTTTGA
TCTTTAGTTGACTCTACAGTCATGAAACATACAGGTCTTTCAAAGTCATTCTCAATATTC
AGCTTTTGTAAATTATCAAGCTTCAAAAAGCTTTTTTTTAAAAAACAACATGCATATT
CTAAAAATGACTATTGGTGGGGAGGTGTAAATAAGTCATACCTTCTTAAAACAGAAAATT
TAAGTAAAGTCTTTTAAATGAAACCTGTAAAAGTATTGACTCTTCTACCAAGTTGGTATG
ATATTCCAGGCAGCTCAATGATTATCACATTTGAGACCCTGTGTTTGAAGCATTTACAGG
CAATGTACAGCAACAGAGGTACCTCTTGGTGTATAGTATTTACATTCTCTTTTAGGTAGA
AGAGGCAATTTTACCCTTATTTTACATGGTTAGAAATTTAAAGCAAGATCATTTACCCAA

Fig. 9A

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GGATAGGTGTTTGGTAATGTTGAAGGAGTTAGTCTGGCTTCATGTTTTACATCTTCAACT
AAAATCCCATACTATCTGCTTGGATTTGGAGAGCCAAAAAATAAAGCTGATTGTCATGTG
ATTAAATATCTGATCAACAGGTATGAATATAACTTAAATCAGCATATTTTTGCCATGGTA
ATAAATTGTCCTATAAACTATTTATATATTTTTTGTTCCTCATAATTATCACTAATAAGCA
TCAGTTTGTGTTTTTAAAAGGATATTTAAGTGAGCATTTTCTAGTTCATATGAAAATAA
CCATAGTACAGGATGATTTCTGTCCACACAAAGGTTAAATTAGATTGCACAGTTAATTTT
CACTTATATTTATGGTACTATTATGTGGGTGATGCCTTTTTCTTTTAAGCCCAGTACATA
TATTATGCCTGCCTAAGTTCTGAACTGGGGCTGTATTTAGTAGTTGTAGAATTATTGAT
ATTTAGTTTTGATAGCTAATGTTTAATTGTTTGGATCTGCACAGTTTGGTTTTTGCACAA
AAGTCATTTAAAAAAATCTGAGTAATTGTCAAATATTAAGAAAGATATTCTTCCTGTA
AGGAATACAGTTTTTAGTCAAAGTGGCCATTACATCCTCTTTTTAATTTACATAATACAG
ATACTTGAGAAAGTTGTTGTGGTGTGTATGCCAAGAAAATTCTTTTTATTGGTGCCTAT
ATTGTAACAATTATTTTTAATGCATTGTATTTTGAAGTAACGGTTCAGTTAAATTTTTCA
CCTGCTGTGTAACGAAACACAATTACAGTTTATAATCATCTGTAGAAGTCTGGAGATAA
TTTTGCAACTCATGTTATGGGTAAATGAATATTTTTGTAAAAGTAAAAGCAACAAFTT
ATAAATTGATTATTTGAACTTTACAACACAATTGCATCCCAAATACAAATTGTATTGCT
TATTCATTATAGCTATTCGTCTCTGTAATCTGTTTCTAGGTGAAGCATACTCCAGTGTTTT
AGGGGTTTTGAAAATAAATATTTAAATTTACAGTCAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAA

SEQ ID NO: 2 STLK3 HUMAN

GACAGCAGCGCCGGCCCCGGCAGCTCCCGCGGCCCCGGCCCCGGCCCCGGCCCCGGCCCC
GGCGGCACAGGCTGTCGGCTGGCCCATCTGCAGGGACGCGTACGAGCTGCAGGAGGTTAT
CGGCAGTGGAGCTACTGCTGTGGTTCAGGCAGCCCTATGCAAACCCAGGCAAGAACGTGT
AGCAATAAAACGGATCAACTTGGAAAAATGCCAGACCAGTATGGATGAACTATTAAAAGA
AATTCAAGCCATGAGTCAGTGCAGCCATCCCAACGTAGTGACCTATTACACCTCTTTTGT
GGTCAAAGATGAACTTTGGCTGGTCATGAAATTACTAAGTGGAGGTTCAATGTTGGATAT
CATAAAATACATTGTCAACCGAGGAGAACACAAGAATGGAGTTCTGGAAGAGGCAATAAT
AGCAACAATTCTTAAAGAGGTTTTTGAAGGCTTAGACTATCTACACAGAAACGGTCAGAT
TCACAGGGATTTGAAAGCTGGTAATATTCTTCTGGGTGAGGATGGTTCAGTACAAATAGC
AGATTTTTGGGGTAAGTGCGTTCCTAGCAACAGGGGGTGATGTTACCCGAAATAAAGTAAG
AAAAACATTCGTTGGCACCCCATGTTGGATGGCTCCTGAAGTCATGGAACAGGTGAGAGG
CTATGACTTCAAGGCTGACATGTGGAGTTTTTGAATAACTGCCATTGAATTAGCAACAGG
AGCAGCGCCTTATCACAATATCCTCCCATGAAAGTGTTAATGTTGACTTTGCAAAATGA
TCCACCCACTTTGGAACAGGGGTAGAGGATAAAGAAATGATGAAAAAGTACGGCAAGTC
CTTTAGAAAATTACTTTCACTGTGTCTTCAGAAAGATCCTTCCAAAAGGCCACAGCAGC
AGAACTTTTTAAATGCAAATTCTTCCAGAAAGCCAAGAACAGAGAGTACCTGATTGAGAA
GCTGCTTACAAGAACACCAGACATAGCCCAAAGAGCCAAAAGGTAAGAAGAGTTCTCTGG

Fig. 9B
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METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

GTCAAGTGGTCACCTTCATAAAACCGAAGACGGGGACTGGGAGTGGAGTGACGACGAGAT
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ATTTGAGTTTACTCCAGGAAGAGATACAGCAGATGGTGTATCTCAGGAGCTCTTCTCTGC
TGGCTTGGTGGATGGTCACGATGTAGTTATAGTGGCTGCTAATTTACAGAAGATTGTAGA
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GATTCCTGATGAAGTGAAGCTGATTGGGTTTGCTCAGTTGAGTGTGAGCTGATGTATGTC
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TCTTTCTGCCCATTTCTCTCCACCCCTCACTCCCATTTCCTAGCAAAATCAGAAGATTG
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AATTGTACATCTGACAATACTGCCTCTTTTATGTTGTATTTAGAAATTAATATACTTATA
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GTAACCTCTAAATTTTGAAATGACTGAATTAGGAATTTGGATGCTTATTTCTTTTAGTCTG
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GTAATGTTGCCATTCTGTTAGATTGCTAACTATATACCCATCTCTGATTTGGCTCTCC
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GGCAGCTCTTTAATGTACTTCAAAAAGCAAATATATATTACTAAGGAAAAAAGTTATTT
ATAATTGCCTTGTCATAATTGTTAAGGTGTTCTAGAGCCATTTGCATACAATTTAATGTA
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GAAAATAAAAGTGTATTGCACAATGAAAAA

SEQ ID NO: 3 STLK4 HUMAN

CAAAAGTGGAGTCCTAGATGANTCTACCATTGCTACGATACTCCGAGAAGTACTGGAAGG
GCTGGAATATCTGCATAAAANTGGACAGATCCACAGAGATGTGAAAGCTGGAACATTCT

Fig. 9C
35/76

Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

T N T T G G A G A A G A T G G C T C A G T A C A G A T T T C A G A C T T T G G G G T T A G T G C T T T T T T A G C A A C
 T G G T G G T G A T A T T A C C C G A A A T A A A G T G A G A A A G A C C T T T G T T G G C A C C C C T T G T T G G A T
 G G C A C C T G A A G T T A T G G A A C A G G T C C G T G G T T A T G A T T T C A A A G C T G A T A T T T G G A G T T T
 T G G A A T T A C A G C A A T T G A A T T G G C T A C A G G G G C G G C T C C T T A T C A T A A A T A T C C A C C A A T
 G A A G G T T T T A A T G C T G A C A C T G C A G A A C G A T C C T C C T T C T T T G G A A A C T G G T G T T C A A G A
 T A A A G A A A T G C T G A A A A A A T A T G G A A A A T C A T T T A G A A A A A T G A T T T C A T T G T G C C T T C A
 A A A A G A T C C A G A A A A A A G A C C A A C A G C A G C A G A A C T A T T A A G G C A C A A A T T T T T C C A G A A
 A G C A A A G A A T A A A G A A T T T C T T C A A G A A A A A C A T T G C A G A G A G C A C C A A C C A T T T T C T G A
 A A G A G C A A A A A A G G T T C G G A G A G T A C C A G G T T C C A G T G G G C G T C T T C A T A A G A C A G A G G A
 T G G A G G C T G G G A G T G G A G T G A T G A T T T T G A T G A A G A A A G T G A G G A A G G G A A A G C A G C
 A A T T T C A C A A C T C A G G T C T C C C C G A G T G A A A G A A T C A A T A T C A A A T T C T G A G C T C T T T C C
 A A C A A C T G A T C C T G T G G G T A C T T T G C T C C A A G T T C C A G A A C A G A T C T C T G C T C A T C T A C C
 T C A G C C A G C T G G G C A G A T T G C T A C A C A G C C A A C T C A A G T C T C T C T C C C A C C C A C C G C A G A
 G C C A G C A A A A A C A G C T C A G G C T T T G T C T T C A G G A T C A G G T T C A C A A G A A A C C A A G A T C C C
 A A T C A G T C T A G T A C T A A G A T T A A G G A A T T C C A A A A A G A A C T A A A T G A T A T T C G A T T T G A
 A T T T A C T C C T G G G A G A G A T A C A G C A G A G G G T G T C T C T C A G G A A C T C A T T T C T G C T G G C C T
 G G T C G A C G G A A G G G A T T T A G T A A T A G T G G C A G C T A A T T T G C A G A A A A T T G T G G A A G A A C C
 T C A G T C A A A T C G A T C T G T C A C T T T C A A A C T G G C A T C T G G T G T C G A A G G C T C A G A T A T T C C
 T G A T G A T G G T A A A C T G A T A G G A T T T G C C C A G C T C A G C A T C A G C T A A A C C A C A A C C C T G G A
 A G A G G C G G C C T A A G G A G A T T C C A C A C A T G C G T A T C T C T G T T G C T T C T A T T G G C C T A A A C C
 C A C T A C T G C C A A G A A C C C A G C A A C A A C C T C C C G G C T A G G A G C T T T A G A A G T C T T T A T G
 T T C T T C C T G C C A T C A T T C C T C C T T T T C C C A C A G G G A A A G A A A A G T T G G A T C A C T A G T G G C
 C A G C A T C C C C A G A G T T C C G T T A G T A A A C T T A C T T C A T A T G T C C C C T G T C T T C C T C C A T C T
 G A G A A G T G G C C C A T G T G C T T C A A G G C C C A G G A G G G A G A T C T G T C A G C T C A T T C T T G C C T T
 A C T C C A A T G A T G G C C C A G G T G G A A A A G T A G C A G C T G T A T C G G G C T T C C T C A T C C T G C C T G
 T T C C C C C A C A C C T G C C A G G A T A T G G A C A T C T T G G G A T A T C T C T T T A C C A C T G A A G T A G A A
 T T G A T T G T T C A G C T G G A G C C C A G A G A A T T T A A T T T A A T G T T T T T T C T T T G T A C C T G A T G T
 G A A T T C T A G C A A C C T T T G T T A G G A A A A A G C A C A G C C T C A G A T G G A G G C A G C C T A A A C T G T
 G T T C T T G T T T T G T T C A T G G T G T T T C T A A G C G T T T T G C T G A A G C T G C T C T C A G G C A C C C C C
 T T C T T C A T T G C T C T C C A G A A A G G G T T G C T A G C C T T A A C T T C A G C T G G T G C A A A A C A T C
 T G A C T G T A G C C G A A C T T C A G C C A T C A G A T C C T T C A A A G T G G A A C T T T G G A T T G T T T T T A C
 A G A C A A C A T C G A G T A A T G G C T T G T A A A T G T G A A T T T T G C C A G A G G T G G T T T T T G A A C A G G
 A A A A T C A T A A T T C A T A T C A T T G G A G A A G T A T T T A T T T T C A A A T A T C A A A T T G A A G A A A A
 C T C A A T C C T C C C A T G A A A A T C A G T T C G C C T G G C C T C C A A G T C G T G A G G A A A T G G G T A T G C
 A A G G C T G A G A T T T C T A C A G C A A T A A A G G A G A C A C A C A C T G G G C C A G A G A G G C C T G C C T T C
 T G C C T G C T C T C C T G C A C T G A C C C T T T G G A G G G G G T C T C T G T G T G C T G A A G C T A A C T C A A G
 A T G G A A A G T G A A A C C A C A T G T G C C G T G A C C T T T A G G T T T T A T G A G T A G A C A G T G T T C A T T
 T G A T T T T C T A C A G A A A T A A T A A A A T T A T T C T T T A G G T T T A A A A A A G A G C A C T C A T A A T G

Fig. 9D
 36/76

Title: PAK5 SCREENING
 METHODS
 Inventor(s): Gregory PLOWMAN
 et al.
 Attorney Docket No.: 034536-0688

CAATATGTGAATAATCAGTGAGGTTGATTTTTCTTTTTCTACCGTTTCATAGTCTTTG
TCTAACTGCTAGTAACCCTACCGAGTTTTATATATGAGTGGGATACTCAATCTGGCCTTA
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CTGAGTCTTTAGTTTTAGTCATGGGCTTTCTTCACCTGCTCTAGGTGCAAAGGCATGTTG
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TTTGCCCTGCTAGGAATTAGAAGACAGACACCATGTCCCAGGACAGTGTTACTTCTTCTG
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CAGAACTGCCCAGGTGGAACAGCACGTAACCTAGTGAGTGACTGTACTCCTTTCTAGGA
ATGCTGATTCAGAGTGCACCTCTTTGACTAGGTCCCAGGATCCCCTTGTCCCTGGAGTAG
GGAATACTATAGCACAAAGTAATATGTGCCAATGCTATTTGTGAAATGTTTGGTCTTTC
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CTGATAATATTTAATAATCTGGAGGAGAGAATAATGATGTACCAATAAGTGGAGATTCCT
CCTTATGATGTATGCTAGGTTATGGAAGATGTAAAATATTCAACTTTTTCTCCTTTTTT
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SEQ ID NO: 4 STLK5 HUMAN

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GTCAAGGTTCTGCCGTGGCTCAGCCCCGAGGTCTCCAGCAGAATCTCCAGGGTTATGAT
GCCAAGTCTGACATCTACAGTGTGGGAATCACAGCCTGTGAACTGGCCAACGGCCATGTC
CCCTTTAAGGATATGCCTGCCACCCAGATGCTGCTAGAGAACTGAACGGCACAGTGCCC
TGCCTGTTGGATACCAGCACCATCCCCGCTGAGGAGCTGACCATGAGCCCTTCGCGCTCA
GTGGCCAACTCTGGCCTGAGTGACAGCCTGACCACCAGCACCCCCCGGCCCTCCAACGGT
GACTCGCCCTCCCACCCCTACCACCGAACCTTCTCCCCCACTTCCACCACTTTGTGGAG
CAGTGCCTTCAGCGCAACCCGGATGCCAGGCCAGTGCCAGCACCTCCTGAACCACTCT

Fig. 9E
37/76

Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

TTCTTCAAGCAGATCAAGCGACGTGCCTCAGAGGCTTTGCCCGAATTGCTTCGTCCTGTC
ACCCCATCACCAATTTTGAGGGCAGCCAGTCTCAGGACCACAGTGGAAATCTTTGGCCTG
GTAACAAACCTGGAAGAGCTGGAGGTGGACGATTGGGAGTTCTGAGCCTCTGCAAACCTGT
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ATTCCCGCCCTCCTGGGCAGATTGGGTAGAAAGGACATTCTTCCAGGAAAGTTGACTGCT
GACTGATTGGGAAAGAAAATCCTGGAGAGATACTTCACTGCTCCAAGGCTTTTGAGACAC
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GCTCAGGTGACCTCCTCCGCAGAAGAGAGATGCTGCTCTGGCCCTGGGAGCTGAATTCCA
AGCCCAGGGTTTGGCTCCTTAAACCCGAGGACCGCCACCTCTTCCCAGTGCTTGCGACCA
GCCTCATTCTATTTAACTTTGCTCTCAGATGCCTCAGATGCTATAGGTCAGTGAAAGGGC
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CATTTCTGTCTTTTTAAGCACAGACTAAGGCTGGAACAGTCCATCCTTATCCCTCTTCTG
GCTTGGGCCCTGACACCTAAGTCTTTCCACGGTTTATGTGTGTGCCTCATTCTTTCCC
ACCAAGAATCCATCTTAGCGCCTCCTGCCAGCTGCCCTGGTGCTTTCTCCAAGGGCCATC
AGTGTCTTGCCTAGCTTGAGGGCTTAAGTCCTTATGCTGTGTAGTTTCGTTGTCAGAAC
AAATTAAAATTTTCAGAGACGCTG

SEQ ID NO: 9 ZC1 HUMAN

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GTCTATAAGGGTCGACATGTTAAAACGGGTCAGTTGGCAGCCATCAAAGTTATGGATGTC
ACTGAGGATGAAGAGGAAGAAATCAAACCTGGAGATAAATATGCTAAAGAAATACTCTCAT
CACAGAAACATTGCAACATATTATGGTGCTTTTCATCAAAAAGAGCCCTCCAGGACATGAT
GACCAACTCTGGCTTGTTATGGAGTTCTGTGGGGCTGGGTCCATTACAGACCTTGTGAAG
AACACCAAAGGGAACACACTCAAAGAAGACTGGATCGCTTACATCTCCAGAGAAATCCTG
AGGGGACTGGCACATCTTCACATTCATCATGTGATTCACCGGGATATCAAGGGCCAGAAT
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GACAGGACTGTGGGGCGGAGAAATACGTTTCATAGGCACTCCCTACTGGATGGCTCCTGAG
GTCATCGCCTGTGATGAGAACCAGATGCCACCTATGATTACAGAAGTGATCTTTGGTCT
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ATGAGAGCACTGTTTCTCATTCCCAGAAACCCTCCTCCCCGGCTGAAGTCAAAAAAATGG
TCGAAGAAGTTTTTTAGTTTTATAGAAGGGTGCCTGGTGAAGAATTACATGCAGCGGGCC
TCTACAGAGCAGCTTTTGAAACATCCTTTTATAAGGGATCAGCCAAATGAAAGGCAAGTT
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ACTGAGTATGAGTACAGTGGGAGTGAGGAAGAAGAGGAGGAAGTGCCTGAACAGGAAGGA
GAGCCAAGTTCCATTGTGAACGTGCCTGGTGAGTCTACTCTTCGCCGAGATTTCTTGAGA
CTGCAGCAGGAGAACAAGGAACGTTCCGAGGCTCTTCGGAGACAACAGTTACTACAGGAG
CAACAGCTCCGGGAGCAGGAAGAATATAAAAGGCAACTGCTGGCAGAGAGACAGAAGCGG

Fig. 9F
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

ATTGAGCAGCAGAAAGAACAGAGGCGACGGCTAGAAGAGCAACAAAGGAGAGAGCGGGAA
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GAGGAGTTGGAGAGAAGGCGCAAAGAAGAAGAGGAGAGGAGACGGGCAGAAGAAGAAAAG
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CGGGAGATGGAGGAGCACCGGCAGGCAGAGAGGCTCCAGAGGCAGTTGCAACAAGAACAA
GCATATCTCCTGTCTCTACAGCATGACCATAGGAGGCCGACCCGCAGCACTCGCAGCAG
CCGCCACCACCGCAGCAGGAAAGGAGCAAGCCAAGCTTCCATGCTCCCGAGCCCAAAGCC
CACTACGAGCCTGCTGACCGAGCGCGAGAGGTGGAAGATAGATTTAGGAAAATAACAC
AGCTCCCCTGAAGCCCAGTCTAAGCAGACAGGCAGAGTATTGGAGCCACCAGTGCCCTCC
CGATCAGAGTCTTTTTTCCAATGGCAACTCCGAGTCTGTGCATCCCGCCCTGCAGAGACCA
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CGTAAATACAAGAAGAGGTTTAACTCTGAGATTCTGTGTGCTGCCTTATGGGGAGTGAAT
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GTGGATTACAGGATCAGTCTATGACATTTATCTACCAACACATATCCAGTGTAGCATCAA
CCCCATGCAATCATCATCCTCCCCAATACAGATGGAATGGAGCTTCTGGTGTGCTATGAA
GATGAGGGGGTTTATGTAAACACATATGGAAGGATCACCAAGGATGTAGTTCTACAGTGG

Fig. 9G
39/76

Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

GGAGAGATGCCTACATCAGTAGCATATATTCGATCCAATCAGACAATGGGCTGGGGAGAG
AAGGCCATAGAGATCCGATCTGTGGAACTGGTCACTTGGATGGTGTGTTTCATGCACAAA
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CGGTCTGGTGGCAGCAGTCAGGTTTATTTTCATGACCTTAGGCAGGACTTCTCTTCTGAGC
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TTGGAATTCCTTGTAAC

SEQ ID NO: 10 ZC2 HUMAN

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CAGCAGCAGCGGGAGAATGAGGAGCACAAGCGGCAGCTGCTGGCCGAGCGTCAGAAGCGC
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GAGGCTCTGAACGTGACCTCCACCGCGTGGAGATGCCACGCCAGAACTCAGATCCCACC
TCGGAAAATCCTCCTCTCCCCACTCGCATTGAAAAGTTTGACCGAAGCTCTTGGTTACGA

Fig. 9H
40/76

Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

CAGGAAGAAGACATTCCACCAAAGGTGCCTCAAAGAACAACCTTCTATATCCCCAGCATT
 GCCAGAAAGAATTCTCCTGGGAATGGTAGTGCTCTGGGACCCAGACTAGGATCTCAACCC
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 CCCCATTGAAGAAGGTGACTGATTACTCCTCCTCCAGTGAGGAGTCAGAAAGTAGCGAGG
 AAGAGGAGGAAGAGGAAGATGGAGAGAGCGAGACCCATGATGGGACAGTGGCTGTGAGCG
 ACATACCCAGACTGATACCAACAGGAGCTCCAGGCAGCAACGAGCAGTACAATGTGGGAAT
 GGTGGGGACGCATGGGCTGGAGACCTCTCATGCGGACAGTTTTCAGCGGCAGTATTTCAAG
 AGAAGGAACCTTGATGATTAGAGAGACGTCTGGAGAGAAGAAGCGATCTGGCCACAGTG
 ACAGCAATGGCTTTGCTGGCCACATCAACCTCCCTGACCTGGTGCAGCAGAGCCATTCTC
 CAGCTGGAACCCCGACTGAGGGACTGGGGCGCGTCTCAACCCATTCCCAGGAGATGGACTCT
 GGGACTGAATATGGCATGGGGAGCAGCACCAAAGCCTCCTTCACCCCTTTGTGGACCCCAG
 AGTATACCAACGTCTCCCCTGATGAAGATGAAGAGGATGAGGAATCATCAGCCGCAGCTCT
 GTTTACTGGCGAACTTCTTAGGCAAGAACAGGCCAAACTCAATGAAGCAAGAAAGATTTTC
 GGTGGTAATGTAAACCCCAACCAACATTTCGGCCTCATAGCGACACACCAGAAATCAGAA
 AATAACAAGAAACGATTCAACTCAGAAATACTTTGTGCAGCTCTGTGGGGTGTAACCTTCT
 GGTGGGGACTGAAAATGGCCTGATGCTTTTGGACCGAAGTGGGCAAGGCAAAGTCTATAAT
 CTGATCAACCGGAGGGCGATTTTCAGCAGATGGATGTGCTAGAGGGACTGAATGTCCTTGT
 GACAATTTCAGGAAAGAAGAATAAGCTACGAGTTTACTATCTTTTCATGGTTAAGAAACAG
 AATACTACATAATGACCCAGAAAGTAGAAAAGAAACAAGGCTGGATCACTGTTGGGGACTT
 GGAAGGCTGTATACATTATAAAGTTGTTAAATATGAAAGGATCAAATTTTTTGGTGATTGC
 CTTAAAGAATGCTGTGGAAATATATGCTTGGGCTCCTAAACCGTATCATAAATTCATGGC
 ATTAAAGTCTTTTGCAGATCTCCAGCACAAAGCCTCTGCTAGTTGATCTCACGGTAGAAG
 AAGGTCAAAGATTAAAGGTTATTTTTGGTTTACACACTGGTTTCCATGTAATTGATGTTG
 ATTCAAGAACTCTTATGATATCTACACACCATCTCATATTCAGGGCAATATCACTCCTCAT
 GCTATTGTCATCTTGCCTAAAACAGATGGAATGGAAATGCTTGTGTTGCTATGAGGATGAG
 GGGGGTGATGTAAACACCTATGGCCGGATAACTAAGGATGTGGTGCTCCAATGGGGAGAAAT
 GCCACGTCTGTGGCCTACATTCATTCCAATCAGATAATGGGCTGGGGCGAGAAAGCTATTG
 AGATCCGGTCAGTGGAAACAGGACATTTGGATGGAGTATTTATGCATAAGCGAGCTCAAAG
 GTTAAAGTTTCTATGTGAAAGAAATGATAAGGTATTTTTTGCATCCGTGCGATCTGGAGGA
 AGTAGCCAAGTGTTTTTTCATGACCTCAACAGAAATTCATGATGAACTGGTAACAGAAAG
 AGCACTTGGCACTTATCTTCATGGCGTTATTTCTAATTTAAAGAACATAACTCATGTGG
 ACTTATGCCAGTCTAGAGGCAGAATCAGAAGGCTTGGTTGAACATATCGCTTTCCTTTT
 TCCTCTCCCTCCGCCCCCTCCAGTACAGTCCATCT

Fig. 9 I
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Title: PAK5 SCREENING
 METHODS

Inventor(s): Gregory PLOWMAN
 et al.

Attorney Docket No.: 034536-0688

SEQ ID NO: 11 ZC3 HUMAN

GCATTTGGGGAGGTGTATGAGGGTCGGCATGTCAAGACGGGGCAGCTGGCTGCCATCAAG
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AAGTACTCTCACCACCGCAACATCGCCACCTACTACGGAGCCTTCATCAAGAAGAGCCCC
CCGGGAAACGATGACCAGCTCTGGCTGGTGATGGAGTTCTGTGGTGCTGGTTCAGTGA
GACCTGGTAAAGAACACAAAAGGCAACGCCCTGAAGGAGGACTGTATCGCCTATATCTGC
AGGGAGATCCTCAGGGGTCTGGCCCATCTCCATGCCCACAAGGTGATCCATCGAGACATC
AAGGGGCAGAATGTGCTGCTGACAGAGAATGCTGAGGTCAAGCTAGTGGATTTTGGGGTG
AGTGCTCAGCTGGACCGCACCGTGGGCAGACGGAACACTTTCATTGGGACTCCCTACTGG
ATGGCTCCAGAGGTCATCGCCTGTGATGAGAACCCTGATGCCACCTATGATTACAGGAGT
GATATTTGGTCTCTAGGAATCACAGCCATCGAGATGGCAGAGGGAGCCCCCCTCTGTGT
GACATGCACCCCATGCGAGCCCTCTTCCTCATTCTCGGAACCCTCCGCCCAGGCTCAAG
TCCAAGAAGTGGTCTAAGAAGTTCATTGACTTCATTGACACATGTCTCATCAAGACTTAC
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GAGCGGCAGGTCCGCATCCAGCTTAAGGACCACATTGACCGATCCCGGAAGAAGCGGGGT
GAGAAAGAGGAGACAGAATATGAGTACAGCGGCAGCGAGGAGGAAGATGACAGCCATGGA
GAGGAAGGAGAGCCAAGCTCCATCATGAACGTGCCTGGAGAGTCGACTCTACGCCGGGAG
TTTCTCCGGCTCCAGCAGGAAAATAAGAGCAACTCAGAGGCTTTAAACAGCAGCAGCAG
CTGCAGCAGCAGCAGCAGCAGGAGACCCCGAGGCACACATCAAACACCTGCTGCACCAGCGG
CAGCGGCGCATAGAGGAGCAGAAGGAGGAGCGGCGCCGCGTGGAGGAGCAACAGCGGGCGG
GAGCGGGAGCAGCGGAAGCTGCAGGAGAAGGAGCAGCAGCGGCGGCTGGAGGACATGCAG
GCTCTGCGGCGGGAGGAGGAGCGGCGGCAGGCGGAGCGCGAGCAGGAATATATTTCGTAC
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GCCCTGCTGCTGGAATACAAGCGGAAGCAGCTGGAGGAGCAGCGGCAGTCAGAACGTCTC
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CAGCAGCTTCAGAAACAACAGCAGCAGCAGCTCCTGCCTGGGGACAGGAAGCCCCTGTAC
CATTATGGTCGGGGCATGAATCCCGCTGACAAACCAGCCTGGGCCCCGAGAGGTAGAAGAG
AGAACAAGGATGAACAAGCAGCAGAACTCTCCCTTGGCCAAGAGCAAGCCAGGCAGCAG
GGGCCTGAGCCCCCATCCCCAGGCCTCCCCAGGGCCCCCAGGACCCCTTTCCAGACT
CCTCCTATGCAGAGGCCGGTGGAGCCCCAGGAGGGACCGCACAAAGAGCCTGGTGGCACAC
CGGGTCCCCTGAAGCCATATGCAGCACCTGTACCCCGATCCCAGTCCCTGCAGGACCAG
CCCACCCGAAACCTGGCTGCCTTCCCAGCCTCCCATGACCCCGACCTGCCATCCCCGCA
CCCCTGCCACGCCCAGTGCCCGAGGAGCTGTCATCCGCCAGAATTCAGACCCACCTCT
GAAGGACCTGGCCCCAGCCCCGAATCCCCAGCCTGGGTCCGCCAGATAACGAGGCCCA
CCCAAGGTGCCTCAGAGGACCTCATCTATCGCCACTGCCCTTAACACCAGTGGGGCCGGA
GGGTCCCGGCCAGCCCAGGCAGTCCGTGCCAGACCTCGCAGCAACTCCGCCTGGCAAATC
TATCTGCAAAGGCGGGCAGAGCGGGGCACCCCAAAGCCTCCAGGGCCCCCTGCTCAGCCC
CCTGGCCCGCCCAACGCCTCTAGTAACCCCGACCTCAGGAGGAGCGACCTGGCTGGGAA

Fig. 9J
42/76

Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

CGCTCGGACAGCGTCCTTCCAGCCTCTCACGGGCACCTCCCCCAGGCTGGCTCACTGGAG
CGGAACCGCGTGGGAGTCTCCTCCAAACCGGACAGCTCCCCTGTGCTCTCCCCTGGGAAT
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AAAGAGCGGACTCTGGACGAGGCCCTCGGCCTCCCAAGAAGGCCATGGACTACTCGTCG
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GAGGGGAGCAGAGATACCCCTGGGGGCGCGATGGGGATACAGACAGCGTCAGCACCATG
GTGGTCCACGACGTCGAGGAGATCACCGGGACCCAGCCCCCATACGGGGGCGGCACCATG
GTGGTCCAGCGCACCCCTGAAGAGGAGCGGAACCTGCTGCATGCTGACAGCAATGGGTAC
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AGCCCACCCTCGAAGGATGGGAGTGGTGACTACCAGTCTCGTGCGGCTGGTAAAGGCCCT
GGCAAGAGCTCGTTCACGATGTTTGTGGATCTAGGGATCTACCAGCCTGGAGGCAGTGGG
GACAGCATCCCCATCACAGCCCTAGTGGGTGGAGAGGGCACTCGGCTCGACCAGCTGCAG
TACGACGTGAGGAAGGGTTCTGTGGTCAACGTGAATCCCACCAACACCCGGGCCACAGT
GAGACCCCTGAGATCCGGAAGTACAAGAAGCGATTCAACTCCGAGATCCTCTGTGCAGCC
CTTTGGGGGGTCAACCTGCTGGTGGGCACGGAGAACGGGCTGATGTTGCTGGACCGAAGT
GGGCAGGGCAAGGTGTATGGACTCATTGGGCGGCGACGCTTCCAGCAGATGGATGTGCTG
GAGGGGCTCAACCTGCTCATCACCATCTCAGGGAAAAGGAACAAACTGCGGGTGTATTAC
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ATTAAGTTCCTGGTCATCGCCCTCAAGAGCTCCGTGGAGGTGTATGCCTGGGCCCCCAA
CCCTACCACAAATTCATGGCCTTCAAGTCCTTTGCCGACCTCCCCCACC GCCCTCTGCTG
GTCGACCTGACAGTAGAGGAGGGGCGAGCGGCTCAAGGTCATCTATGGCTCCAGTGCTGGC
TTCCATGCTGTGGATGTCGACTCGGGGAACAGCTATGACATCTACATCCCTGTGCACATC
CAGAGCCAGATCACGCCCCATGCCATCATCTTCCTCCCCAACACCGACGGCATGGAGATG
CTGCTGTGCTACGAGGACGAGGGTGTCTACGTCAACACGTACGGGCGCATCATTAAGGAT
GTGGTGCTGCAGTGGGGGGAGATGCCTACTTCTGTGGCCTACATCTGCTCCAACCAGATA
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GTCTTCATGCACAAACGAGCTCAGAGGCTCAAGTTCCTGTGTGAGCGGAATGACAAGGTG
TTTTTTGCCTCAGTCCGCTCTGGGGGCGAGCAGCCAAGTTTACTTTCATGACTCTGAACCGT
AACCGCATCATGAACTGGTGACGGGGCCCTGGGCTGGGGCTGTCCACACTGGACCCAGC
TCTCCCCCTGCAGCCAGGCTTCCCGGGCGCCCTCTTTCCCTCCCTGGGCTTTTGCTT
TACTGGTTTGATTTCACTGGAGCCTGCTGGGAACGTGACCTCTGACCCCTGA

SEQ ID NO: 12 ZC4 HUMAN

CAATGTAAACCCACTCTATGTCTCTCCTGCATGTAAAAAACCACTAATCCACATGTATGA
AAAGGAGTTCACCTTCTGAGATCTGCTGTGGTTCTTTGTGGGGAGTCAATTTGCTGTTGGG
AACCCGATCTAATCTATATCTGATGGACAGAAGTGGAAAGGCTGACATTACTAACTTAT
AAGGCGAAGACCATTCCGCCAGATTCAAGTCTTAGAGCCACTCAATTTGCTGATTACCAT

Fig. 9K
43/76

Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

CTCAGGTCATAAGAACAGACTTCGGGTGTATCATCTGACCTGGTTGAGGAACAAGATTTT
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CTTTGATGAAAGCACTGCTATTTAAAGTATTTCCAACACTTGATCATAAGCCAGTGACAGT
TGACCTGGCTATTGGTTCTGAAAAAAGACTAAAGATTTTCTTCAGCTCAGCAGATGGATA
TCACCTCATCGATGCAGAATCTGAGGTTATGTCTGATGTGACCCTGCCAAAGAATCCCCT
GGAAATCATTATACCACAGAATATCATCATTTTACCTGATTGCTTGGGAATTGGCATGAT
GCTCACCTTCAATGCTGAAGCCCTCTCTGTGGAAGCAAATGAACAACTCTTCAAGAAGAT
CCTTGAAATGTGGAAAGACATAACCATCTTCTATAGCTTTTGAATGTACACAGCGAACCAC
AGGATGGGGCCAAAAGGCCATTGAAGTGCGCTCTTTGCAATCCAGGGTTCTGGAAAGTGA
GCTGAAGCGCAGGTCAATTAAGAAGCTGAGATTCTGTGCACCCGGGGTGACAAGCTGTT
CTTTACCTCTACCCTGCGCAATCACCACAGCCGGGTTTACTTCATGACACTTGGAAAAC
TGAAGAGCTCCAAAGCAATTATGATGTCTAAAAGTTTCCAGTGATTTATTACCACATTAT
AAACATCATGTATAGGCAGTCTGCATCTTCAGATTTTCAGAGATTAAATGAGTATTCAGTT
TTATTTTTTAGTAAAGATTAAATCCAAAACCTTACTTTTAATGTAGCACAGAATAGTTTTA
ATGAGAAATGCAGCTTTATGTATAAAATTAAGTATAGCAAGCTCTAGGTACTCCAATGGT
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TTGGACAGTTTGGACAGTATCTGTATTTCAGATTTTACAACATGGAGTAAAGAAACCTGTT
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AGAAAAACATCGGCCAACT

SEQ ID NO: 17 KHS2 HUMAN

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AGCAAGAAATTATTATGATGAAAGACTGTAAACACCCAAATATTGTTGCTTATTTTGGAA
GCTATCTCAGGCGAGATAAGCTTTGGATTTGCATGGAGTTTTGTGGAGGTGGTTCTTTAC
AGGATATTTATCACGTAAGTGGACCTCTGTCAGAACTGCAAATTGCATATGTTAGCAGAG
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CACAGATAACAGCTACAATTGCCAAACGGAAGTCTTTCATTGGCACACCATATTGGATGG
CTCCAGAAGTTGCAGCTGTTGAGAGGAAGGGGGTTACAATCAACTCTGTGATCTCTGGG
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CAATGAGAGCATTATTTCTAATGACAAAAAGCAATTTTCAGCCTCCTAACTAAAGGATA
AAATGAAATGGTCAAATAGTTTTTCATCACTTTGTGAAAATGGCACTTACCAAAAATCCGA
AAAAAGACCTACTGCTGAAAAATTATTACAGCATCCTTTTGTAAACACAACATTTGACAC
GGTCTTTGGCAATCGAGCTGTTGGATAAAGTAAATAATCCAGATCATTCCACTTACCATG

Fig. 9L
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

ATTTTCGATGATGATGATCCTGAGCCTCTTGTTGCTGTACCACATAGAATTCACTCAACAA
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CACCTCCCAGATTACCCCCACACAAACCTGTTGCCTTAGGAAATGGAATGAGCTCCTTCC
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GATAAGATGGGGAAAATTTTGTTTTAAGTGGTATGGATATATTTAGCATATTGAACCACA
CAAGTGCTTAATTCATTGTTATGTAATCTTTGTACATATAGGCAGTATTTTTTCTGTGAA
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GTACAAGTAAGTGTCTTATCTGTACAGATGTAAATGTTGATGAAAATGCAATTGGGGTTA
ATATTTTAAGAATCTTTAGTATATTCTTGGGTGTGGCTATATTACAAAATGGGATGCTG
GCAATGAAACAATACATTTAACACTATTGTATTTTTATTATATGTAATTTAGTAATATGA

Fig. 9M
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

ATATAAATCTTGTAACCTTTTAAAATTGTAATGGAGGCTGTAATCATTTTATAATCTTTTT
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TTTATATTTAAGCAGAATCCTGTAAGATTGCTTGTCTTTGCTTAAAAACAATACCTTTGA
ACATTTTTGAATCACAGAATAGCGGTACCATGATAGAATACTGCAATTGTGGTCAGAATT
ACAGTATGCACAAAGAATTAATTAGCATTATTAAGAGTCCCTCACTAAACATTTTCATATG
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TCACAGGAACTTAGTTTTGGTTTAAGTCATTTTTGATTGCTTTTTTCCAATGGAATATGT
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TTT

SEQ ID NO: 19 SULU1 HUMAN

GGGAGGGTCCTTGTGGCGCCGGGCGGGGTCCTGCGTGGAGAGTGGGACGCAACGCCG
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GCGGCGGCGCCGGGCCCCGGGGTGGTGACAGCAGGTCTGAGGTTGCATCATAAATACAAA
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AACATGAATGCAATGAGTGCCTTATATCACATTGCCCAGAATGACTCCCCAACGTTACAG
TCTAATGAATGGACAGACTCCTTTAGGAGATTTGTTGATTACTGCTTGCAGAAAATACCT
CAGGAAAGGCCAACATCAGCAGAACTATTAAGGCATGACTTTGTTTCGACGAGACCGGCCA

Fig. 9N
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

CTACGTGTCCTCATTGACCTCATACAGAGGACAAAAGATGCAGTTCGTGAGCTAGATAAC
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 CGTGTCAACTTTTCAGTGCTGGCCAAAACCTGGCCGTCTCTTCTATTACAGTACACGTCA
 CAGTATTGATGTGATTCAAAATGTTTCAGTGAAAACCTTTGGAGACAGTTTAAACAAAACC
 AATAAACCAACAACAAAAAAGTGGATGTATATTGCTTTAAGCAATCACTCATTACCACC
 AATCTGTGAAAGTAAAGCAAAAAATAATAATAATAATGCCAAGGGGGAGAGAGACACAA

Fig. 9 O
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Title: PAK5 SCREENING
 METHODS
 Inventor(s): Gregory PLOWMAN
 et al.
 Attorney Docket No.: 034536-0688

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TCCAGTTCAGTATTTGGAGTTCAACACTGTCTCTCAATCAGATCATCTTGATCTTTTTCT
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TTTCAAACGTGTGATTTTTCTTACAATAAAAAATGATGAAAAAAAAAAAAAAAAAAAAA

SEQ ID NO: 20 SULU3 HUMAN

TATTGAATTGGCGGAACGGAAGCCTCCTTTATTTAATATGAATGCAATGAGTGCCTTATA
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CAACTTTGTAGATTCTTGCTCCAGAAAATCCCTCAAGATCGACCTACATCAGAGGAACT
TTTAAAGCACATATTTGTTCTTCGGGAGCGCCCTGAAACCGTGTTAATAGATCTCATTCA
GAGGACAAAGGATGCAGTAAGAGAGCTGGACAATCTGCAGTATCGAAAGATGAAGAACT
CCTTTTCCAGGAGGCACATAATGGACCAGCAGTAGAAGCACAGGAAGAAGAAGAGGAACA
AGATCATGGTGTGTTGGCCGGACAGGAACAGTTAATAGTGTTGGAAGTAATCAATCCATTCC
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AGCATCAGATCCACAATCTCCACCCCAAGTATCTCGTCACAAATCACACTATCGTAATCG
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GGAGGAGTTAAACAAAAGACAGACTCAGAAGGACTTAGAGCATGCCATGCTACTCCGACA
GCATGAATCTATGCAAGAAGTGGAGTTCGCCACCTCAACACAATTCAGAAGATGCGCTG
TGAGTTGATCAGATTACAGCATCAAACCTGAGCTCACTAACCAGCTGGAATATAATAAGCG
AAGAGAACGAGAACTAAGACGAAAGCATGTCATGGAAGTTCGACAACAGCCTAAGAGTTT

Fig. 9P
48/76

Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

GAAGTCTAAAGAACTCCAAATAAAAAAGCAGTTTCAGGATACCTGCAAAATCCAAACCAG
ACAGTACAAAGCATTAAAGAAATCACCTGCTGGAGACTACACCAAAGAGTGAGCACAAAGC
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AGCAGAGTGCCAGGTTTTGAAGATGCAGCTGCAGCAGGAACTGGAGCTGTTGAATGCGTA
TCAGAGCAAAATCAAGATGCAAGCTGAGGCACAACATGATCGAGAGCTTCGCGAGCTTGA
ACAGAGGGTCTCCCTCCGGAGGGCACTCTTAGAACAAGATTGAAGAAGAGATGTTGGC
TTTGCAGAATGAGCGCACAGAACGAATACGAAGCCTGTTGGAACGTCAAGCCAGAGAGAT
TGAAGCTTTTGACTCTGAAAGCATGAGACTAGGTTTTAGTAATATGGTCCTTTCTAATCT
CTCCCCTGAGGCATTACAGCCACAGCTACCCGGGAGCTTCTGGTTGGTCACACAACCCTAC
TGGGGGTCCAGGACCTCACTGGGGTTCATCCCATGGGTGGCCCAACCACAAGCTTGGGGCCA
TCCAATGCAAGGTGGACCCCAAGCCATGGGGTCACCCTTCAGGGCCAATGCAAGGGGTACC
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GGGACGGACGGAGCAGGGCATGAGCAGAAGCACGAGTGTCACCTTACAAATATCCAATGG
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ACACATATATTATGCATGTGGTGAAAAGAATTGGCTAGATAGGGGATTTTTCTGAACACT
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GTGTATTTATTTGTTATTAAATTGATCTGACTTCTCAGCCTCATTTGGACTAAAAAAGA
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CCATGAACACTAAAGGACTTCATTGATTTTTTCAGAGAGTAGAAAACAACCTTAGTTTTTC
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TTGTATTATGATAAGATGGGGTACTTAAGGAGATCACAAAGTTGTGTGAGGATTGCATTA
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TATGGTGGGTATGTCCCGCAGCAGAGTGAGGAGATGAAGCTTACGTGTCCTGACGTTTTG
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TACTTTTACTTTGTTTGTACAAAAACAAAGACATATAGCCAATACAAATCAAATGCCGGA
GGTGTGTTGATGCCATATTTGCAAATTGCCATCTATTGAAATTCTCGTCACACTACATAGA
CATAATTGTTATCTCCTTTTGGCTTATGTGATTTTTCTGTTTACAAGTAGAATAGCCAATT
ATTTAAATGTTTAGTTGCCACAGTGAACCAGGAGTCACTGAGCCAATGACTTTACCAGCT
GCTGACTAATCTTCATCACCCTGTAGATTTTGCTGCATGTGCAGGTCCTCTATTTTTAA
TTGCTGTTTTCGTTGCTGCAGTACTTTACAACTTCTAGTTCGTTGAGACTTAGTGACCA
TTTGGCATCAAGTTAACATCACACAATAGGAAACACCACTTCCACAAGTCTCAAGCCTCA

Fig. 9Q
49/76

Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

GTGCTAAAGTACTACTGAAAAGGAACTAGGAAGTTTGGCCAATT

SEQ ID NO: 21 SULU3 MURINE

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ATAAAAAGCCATTACAAGAAGTGGAATAGCAGCAATTACACATGGTGCTCTCCAGGGAC
TAGCTTATTTACATTCTCATACCATGATCCATAGAGATATCAAAGCAGGAAATATCCTTC
TGACAGAACCCAGGCCAAGTGAAACTTGCTGACTTTGGATCTGCTTCCATGGCTTCCCCTG
CCAATTCTTTTGTGGGAACACCATATTGGATGGCCCCAGAAGTAATTTTAGCCATGGATG
AAGGACAGTATGATGGCAAAGTTGATGTATGGTCTCTTGGAATAACGTGTATTGAATTAG
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AAAATGAATCCCCTACACTACAATCTAATATGAATGATTCTTGCCTCCAGAAAATCCCTC
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TGCAGTATCGAAAGATGAAGAACTCCTTTTCCAGGAGGCACATAATGGGCCAGCGGTAG
AAGCACAGGAAGAAGAGGAGGAGCAAGATCATGGTGTTGGCCGAACAGGAACAGTGAATA
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ACCATACAGTGATGTCTAACAGTTCTGTCATCCACTTAAAACCTGAGGAGGAAAATTACC
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ATAACTTGGAACAGGACCTTGTCAGGGAGGAGTTAAACAAAAGGCAGACTCAAAGGACT
TGGAACATGCAATGCTATTGCGACAGCATGAATCAATGCAAGAAGTGGAGTTTCGCCATC
TCAACACTATTGAGAAGATGCGCTGTGAGTTGATCAGACTGCAGCATCAAAGTGAAGCTCA
CTAACCAGCTAGAGTACAATAAGAGAAGGGAACGGGAAGTGGAGGCGAAAACATGTCATGG

Fig. 9R
50/76

Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

AAGTTCGACAACAACCTAAGAGTCTGAAGTCTAAAGAACTCCAAATAAAAAAGCAGTTTC
AGGATACCTGCAAAATTCAAACCAGACAGTACAAAGCATTAAAGGAATCACCTACTGGAGA
CTACACCAAAGAATGAGCACAAAGCAATC

SEQ ID NO: 25 GEK2 HUMAN

CGAAGCCACAGCCCGAGCCCGAGCCCGAGCCCGAGCCGGCGCCACCGCGCCCCCGGCCAT
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GCTGGGCGACGGCGCCTTCGGCAAGGTTTACAAGGCCAAGAATAAGGAGACGGGTGCTTT
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GATTGAGATCCTGGCCACCTGCGACCACCCCTACATTGTGAAGCTCCTGGGAGCCTACTA
TCACGACGGGAAGCTGTGGATCATGATTGAGTTCTGTCCAGGGGGAGCCGTGGACGCCAT
CATGCTGGAGCTGGACAGAGGCCTCACGGAGCCCCAGATACAGGTGGTTTGCCGCCAGAT
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CAACGTGCTGATGACCCTCGAGGGAGACATCAGGCTGGCTGACTTTGGTGTGTCTGCCAA
GAATCTGAAGACTCTACAGAAACGAGATTCTTCATCGGCACGCCTTACTGGATGGCCCC
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GTCCCTGGGCATCACGCTGATTGAGATGGCCCAGATCGAGCCGCCACACCACGAGCTCAA
CCCCATGCGGGTCTGCTAAAGATCGCCAAGTCGGACCCTCCACGCTGCTCACGCCCTC
CAAGTGGTCTGTAGAGTTCCTGACTTCCTGAAGATAGCCCTGGATAAGAACCCAGAAAC
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GGCTCTGCGGGAGCTGGTGGCTGAGGCCAAGGCCGAGGTGATGGAAGAGATCGAAGACGG
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ACCTTCCACCCCGCTGGCACCCAGCCAGTCTCAGGACAGTGTGAATGAGCCCTGCAGCCA
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AATTCAGGTAGCCCAGGAGAAGCAAGTTGCTGAGCAGGGTGGGGACCTCAGCCCAGCAGC
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CATCACCACTCCAAGATCATCAGCGAAGATGAGAAGAAGGATGAGGAGATGAGATTTCT
CAGGCGCCAGGAACTCCGAGAGCTTCGGCTGCTCCAGAAAGAAGAGCATCGGAACCAGAC
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AATCAACGCCAAGAAGAAGTTCTTTGACACGGAATTAGAGAACCTGGAGCGTCAGCAAAA
GCAGCAAGTGGAGAAGATGGAGCAAGACCATGCCGTGCGCCGCCGGGAGGAGGCCAGGCG

Fig. 9S
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

GATCCGCCTGGAGCAGGATCGGGACTACACCAGGTTCCAAGAGCAGCTCAAACCTGATGAA
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AGCCCTGTGGGAGATGGAAGAGCACCAGCTGCAGGAGAGGCACCAGCTGGTGAAGCAGCA
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CAAGAAGAGCCTCCACATCAACGGCGGGGGCAGCGCAGCTGAGCAGCGTGAGAAGATCAA
GCAGTTCTCCCAGCAGGAGGAGAAGAGGGCAGAAGTCGGAGCGGCTGCAGCAACAGCAGAA
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SEQ ID NO: 27 PAK4 HUMAN

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CAGCGCGATGCCTGTGGATGGCTACATCTCGGGGCTGCTCAACGACATCCAGAAGTTGTC
AGTCATCAGCTCCAACACCCTGCGTGCGCCGAGCCCCACCAGCCGGCGGGCGGGCACAGTC
CCTGGGGCTGCTGGGGGATGAGCACTGGGCCACCGACCCAGACATGTACCTCCAGAGCCC
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GCCGGTGGGGACCTTCAGCCCTCTGACCACTTCGGATACCAGCAGCCCCCAGAAGTCCCT
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CAAGGGTGCCCTGGCTGGTGAAGACACAGGTGTTGTGACACATGAGCAGTTCAAGGCTGC

Fig. 9T
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

GCTCAGGATGGTGGTGGACCAGGGTGACCCCCGGCTGCTGCTGGACAGCTACGTGAAGAT
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CCTGCCCCACTTCAGGGCTGCTGTGAGATGGAATTCAGGAAAGAACTTCAGGTGTCTGG
ACCCTTTCTATCTAGATAATATTTTTTAGATTCTTCTGCTCCCTAGTGACCTACCTGGGGG
CAAAGAAATTGCAAGGACTTTTTTTTTAAGGGTCAGAGTTTTTCAAAACAAAAGCATCTTCC
CTAGAAATTTTTGTGAATTGTTTGCACCTTGTGCCTGTTTTAAATTAAATTGAGTGTTCAA

Fig. 9U
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Title: PAK5 SCREENING
METHODS
Inventor(s): Gregory PLOWMAN
et al.
Attorney Docket No.: 034536-0688

AGCC

SEQ ID NO: 28 PAK5 HUMAN

GGCCAGTGGGGCGAACTGGCAGCTGGCCGGCCCTTTAACACCTACCCGAGGGCTGACAC
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CCCAGCGCCCTTCCCCCTCAACCAAAGAGCCCCCCCCGGGTCACCCCCGCCCCACTGAGGGC
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A ACTCTAGCCCCCTGCCCTTATTGGGGGACAGATGGTCCCTGTCTTGCGGGGTGGCCCTG
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CCCCTGCCTCGAGTTAGTTTTACAATTAACATTGTCTTGTTTTGTGAAAAAAAAAAAAA
AAAAAAAAAA

Fig. 9V
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Title: PAK5 SCREENING
METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

Title: PAK5 SCREENING

METHODS

Inventor(s): Gregory PLOWMAN
et al.

Attorney Docket No.: 034536-0688

>STLK5_h

MSSFLPEGGCYELLTVIGKGFEDLMTVNLARYKPTGEYVTVRRINLEACSNEMVTVFLQGELHVSKLFNHPNIVPYRATFI
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>STLK6_h

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>STLK7_h

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>ZC4_h

MAGPGGWRDREVTDLGHLPDPTGIFSLDKTIGLGTYGRIYGLHEKTGAFYAVKVMNARKDEEEDLRTELNLLRKYSFHK
NIVSFYGAFKLSPPGQRHQLWMVMELCAAGSVTDVVRMTSNQSLKEDWIAIYICREILQGLAHLHAHRVTHRDIKGGQNVL
LTHNAEVKLVDGVSQVSRINGRRNSFIGTPYWMapeVIDCDEDPRRSYDYRSVSWVGITAIEMAEGAPPLCNLQPLE
ALFVILRESAPTVKSSGWSRKFFHFMKCTIKNFLFRPTSANMLQHPFVRDIKNERHVVESLTRHLTGIKKRQKKEQAR
EKSKSVSTLRQALAKRLSPKRFRAKSSWRPEKLELSDLEARRQRRRWEDIFNQHEEELRQVDKDEESSDNDEVFHS

Fig. 10A

IQAEVQIEPLKPYISNPKKIEVQERSVPNNQDHAHHVKFSSVPPQRSLLEQAQKPIDIRQRSSQNRQNWLAA SGDSKH
KILAGKTQSYCLTIYISEVKKEEFQEGMNQKCGAQVGLGPEGHCIWQLGESSSEESPVTRRRSQSSPPYSTIDQKLLV
DIHVPDGFVKVGI SPPVYLTNEWVGYNALSEIFRNDWLTAPV IQPPEEDGYVELYDASADTDGDDDESNDTFEDTYD
HANGNDLQNDQVQANDVCKDHDNNKFVDDVNNNYEAPSCPRASYGRDGSCKQDGYDGSRGKEEAYRGYGSHTANRS
HGGSAASEDNAIGDQEEHAANIGSERRGSEGDGKGVVRTSEESGALGLNGEENCSETDGPGLKRPA SQDFEYLQEEPG
GGNEASNAIDSGAAPSAPDHESDNKDISESTQSDFSANHSSPSKSGMSADANFASAILYAGFVEVPEESP KQPSEVNV
NPLYVSPACKKPLIHMYEKEFTSEICCGSLWGVNLLGTRSNLYLMDRSGKADITKLI RRRPFRQIQVLEPLNLLITISG
HKNRLRVYHLTWLRNKILNNDPESKRQEEMLKTEEACKAIDKLTGCEHFSVLQHEETTYIAIALKSSIHLYAWAPK'SFD
ESTA IKVFPTLDHKPVTVDLAIGSEKRLKIFFSSADGYHLIDAESEVMSDVTLPKNPLEIIIPQNIILPDCLGIGMMLT
FNAEALSVEANEQLFKKILEMWKDI PSSIAFECTQRTTGWGQK AIEVRS LQSRVLESELKRRSIKKL RFLCTRGDKLFFT
STLRNHHSRVYFMTLGKLEELQSNYDV

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MFGKRKRVEISAPSNFEHRVHTGFDQHEQKFTGLPRQWQSLIEESARRPKPLVDPACITSIQPGAPKTI VRGSKGAKDG
ALTLLDEFENMSVTRSNLRRDSPPPPARARQENGMPEEPATTARGPGKAGSRGRFAGHSEAGGSGDRRRAGPEKRP
KSSREGSGGPQESSRDKRPLSGPDVGTQPAGLASGAKLAAGRPFNTYPRADTDHPSRGAQGEPHDVPANGPSAGGLAIP
QSSSSSRPPTRARGAPSPGVLGPHASEPQLAPPACTPAAPAVPGPPRSPQREPQRVSHEQFRAALQLVVDPGDPRSY
LDNFIKIGEGSTGIVCIATVRSSGKLVA VKKMDLRKQQRRELLFNEVVIMRDYQHENVVEMYN SYLVGDELWVVVMEFLEG
GALTDIVTHTRMNEEQIAAVCLAVLQALSVLHAQGV IHRDIKSDSIL LTHDGRVKLSDFGFC AQVSKEVPRRKSLVGTPY
WMAPELISRLPYGPVEVDIWSLGIMVIEMVDGEPYFNEPPLKAMKMIRDNLPPRLKNLHKVSPSLKGFLDRL LV RDP AQR
ATAAELLKHPFLAKAGPPASIVPLMRQNRTR

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MAFANFRRI LRLSTFEKRKSREYEHVRRDLDPNEVWEIVGELGDGAF GKVKYKAKNKETGALAAAKVIETKSEEELEDYIV
EIEILATCDHPYIVKLLGAYYHDGKLWIMIEFCPGGAVDAIMLELDRLG LTEPQIQVVC RQMLEALNFLHSKR I IHRDLKA

Fig. 10B

GNVLMTEGDIRLADFGVSAKNLKTLLQKRDSFIGTPYWMPEVVMCETMKDTPYDYKADIWSLGITLIEMAQIEPPHHEL
NPMRVLLKIAKSDPPTLLTPSKWSVEFRDFLKIALDKNPETRPSAAQLLEHPFVSSITSNKALRELVAEAKAEVMEEIED
GRDEGEEDAVDAASTLENHTQNSSEVSPPSLNADKPLEESPSTPLAPSQSDSVNEPCSPSGDRSLQTTSPPVVAPGN
ENGLAVPVPLRKSRPVSMARIQVAQEKQVAEQGGDLSPAANRSQKASQSRPNSSALETLGGEKLANGSLEPPAQAAAPGP
SKRSDCCSLCTSESMDYGTNLSTDLSLNKEMGSLSIKDPKLYKKTLLKRTKRFVVDGVEVSITTSKIISEDEKKDEEMRF
LRRQELRELRLQKEEHRNQTQLSNKHQLLEQMHKRFEEQINAKKKFFDTELENLERQQKQKQVEKMEQDHA VRRREEAR
RIRLEQDRDYTRFQEQLKLMKKEVKNEVEKLPRQQRKESMKQKMEEHTQKKQLLDRDFVAKQKEDLELAMKRLTTDNRRRE
ICDKERECMKKQELLRDREAAALWEMEEHQLQERHQLVKQQLKDQYFLQRHEL LRKHEKEREQMQRYNQRMIEQLKVRQQ
QEKARLPKIQRSEKTRMAMYKKS LHINGGSAAEQREKIKQFSQQEEKRKQSERLQQQQKHENQMRDMLAQCESNMSEL
QQLQNEKCHLLVEHETQKLKALDESHNQNLKEWRDKLRPRKKALEEDLNQKKREQEMFFKLSEEAECNPSTPSKAAKFF
PYSSGDAS

Fig. 10C

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GGCCAAAGACGGTCGGGGCTGCTTAACCTCCAGGAACAGGGTTTAAGTTTTTTGAAACTGAAGTAGGTCTACACAGTAGGA
ACTCATGTCTATTTCTTAAGTAACACAGAGCGAATCAGGCGGTGGGTCTCGGAAAGTTCAATTGTTGAGGGCTTAAGAG
ATTTGGAACTATTTGGAGACCAATGATGCGAGCTCAGAGTCAATAGCATCTTCTCTAAACAGGAGGTCTATGAGTAGCTT
TCTGCCAGAGGGGTTTACGAGCTGCTCACTGTGATAGGCAAGGATTTGAGGACCTGATGACTGTGAATCTAGCAA
GGTACAAACCAACAGGAGAGTACGTGACTGTACGGAGGATTAACTAGAAAGCTTGTTCCAATGAGATGGTAACATTCITG
CAGGGCAGCTGCATGCTCCAAACTTTCAACCATCCCAATATCGTGCCATATCGAGCCACTTTTATTCAGAGACAATGA
GCTGTGGGTTGTACATCATTTGTCATACGGTTCTTGCAAAAGATCTCATCTGTACACACTTTCATGGATGGCATGAATG
AGCTGGCGATTGCTTACATCTCGCAGGGGTGCTGAAGGCCCTCGACTACATCCACCACATGGGATATGTACACAGGAGT
GTCAAAGCCAGCCACATCCCTGATCTCTGTGGATGGGAAGGTCTACCTGTCTGGTTTGGCAGCAACCTCAGCATGATAAG
CCATGGGCAGCGGAGGTGGTCCACGATTTTCCCAAGTACAGTGTCAAGGTTCTGCCGTGCTCAGCCCGAGGTCC
TCCAGCAGAATCTCCAGGGTTATGATGCCAAGTCTGACATCTACAGTGTGGGAATCACAGCCTGTGAACCTGGCCAAACGGC
CATGTCCCTTTAAGGATATGCCCTGCCACCCAGATGCTGTCTAGAGAACTGAACGGCACAGTGCCCTGCTGTGGATAC
CAGCACCATCCCCGCTGAGGAGCTGACCATGAGCCCTTCGCGCTCAGTGCCCAACTCTGGCCTGAGTGACAGCCTGACCA
CCAGCACCCCCGGCCTCCAACGGTGACTCGCCCTCCCAACCCCTACCAACCGAACCTTCTCCCCCACTTCCACCACTTT
GTGGAGCAGTGCCCTCAGCGCAACCCGGATGCCAGGCCCAAGTCCAGCACCTCTCTGAACCACTCTTCTTCAAGCAGAT
CAAGCGACGTGCCCTCAGAGGCTTTGGCCCGAATTGCTTCGTCTGTCAACCCCATCACCAATTTTGAGGGCAGCCAGTCTC
AGGACCACAGTGGATCTTTGGCCCTGGTAACAAACCTGGAAAGCTGGAGGTGGACGATTGGGAGTTCTGAGCCTCTGCA
AACTGTGCGCATCTCCAGCCAGGGATGCAAGGGCCACCCAGAGGCCCTTCTGAGGGCCGGCCACATTCCTCCGCCCTCT
GGCAGATTGGGTAGAAAGGACATCTTCCAGGAAAGTTGACTGCTGACTGATTGGGAAAGAAATCTCTGGAGAGATACT
TCACGTCTCCAAGGCTTTTGAGACACAAGGGAATCTCAACAACCAAGGATCAGGAGGTCCAAAGCCGACATTCCTCAGTC
CTGTGAGCTCAGGTGACCTCTCCGCAGAAAGAGAGATGCTGCTCTGGCCCTGGGAGCTGAATTCGAAGCCAGGGTTTGG
CTCCTTAACCCGAGGACCCACCTCTTCCAGTGTCTGCCAGCCAGCCTCATTTCTAATTTAAGCTTCTCAGATGCTT
CAGATGCTATAGGTCAGTGAAGGGCAAGTAGTAAAGCTGCTGCCCTCCCTCAGACCTCTCCCTCATAAATCCAGA
GAAGGGCATTTCTGTCTTTTTTAAGCACAGACTAAGGCTGGAAACAGTCCATCTTATCCCTCTTCTGGCTTGGGCCCTGAC

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Fig. 11A

ACCTAAGTCTTTCCACGGTTTATGTGTGCTCATTCCTTTCCACCAAGAAATCCATCTTAGCGCCTCCTGCCAGCTG
CCCTGGTGCTTTCTCCAAAGGCCCATCAGTGCTCTTGCCCTAGCTTGAGGGCTTAAGTCCITATGCTGTGTTAGTTTCGTTGT
CAGAACAAATTAAATTTTCAGAGACGGCTG

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AAGGAAGATAAAACAAAGCCCTTCTTTGGAAATAGATGGATTTTGTGCATTTCTGTGTGAACATAAGTGATTCAATGTCT
CTTTGGATTGCTTCTGCACTTCAAGAACACAAAGTTGAATCACTCAGACCTGAAACAGTCTGAAACCAAGTATCCATCA
ATACTTGGTTGATGAGCCAAACCTTTCTCTGGTCACGTCCTCATCCACTAGAGCCAGTGAAGTACTATGTTCCACCAACGTTT
CTCACTATGAGCTCCAAGTAGAAATAGGAAGGATTGTGACAACTTGACTTCTGTCCATCTTGCAACGGCATACTCCCCACG
GGAACACTGGTAACATAAAATTAACAATCTGGAAACTGCAATGAAGAACGCCCTGAAAGCTTTACAGAAAGCCGTGAT
TCTATCCCACTTTTCCGGCATCCCAATATTACAACCTTATTGGACAGTTTTCACCTGTGGCAGCTGGCTTTGGGTTATTT
CTCCATTTATGGCCATGTTTTCAGCAAGTCAACTCTTGAGGACCTATTTTCCCTGAAGGAATGAGTGAACTTTTAATAAGA
AACATTTCTTTGGAGCCGTGAGAGGGTTGAACCTATCTGCACCAAAATGGCTGTATTACAGGAGTATTAAAGCCAGCCA
TATCCTCATTTCTGGTGATGGCCTAGTGACCTCTCTGGCCTTTCCCATCTGCATAGTTTGGTTAAGCATGGACAGAGGC
ATAGGGCTGTGTATGATTTCCACAGTTCAGCACATCAGTGCAAGCCGTGGCTGAGTCCAGAACTACTGAGACAGGATTTA
CATGGGTATAATGTGAAGTCAGATATTIACAGTGTGGGATTACAGCATGTGAATTAGCCAGTGGCAGGTGCCCTTTCCA
GGACATGCATAGAACTCAGATGCTGTACAGAAACTGAAAGGTCCTCTTATAGCCCATTTGGATATCAGTATTTTCCCTC
AATCAGAAATCCAGAAATGAAAAATTTCCAGTCAGGTGTAGACTCTGGGATTGGAGAAAGTGTGCTTGTCTCCAGTGGAACT
CACACAGTAAATAGTGACCCGATTACACACACCATCTCTCAAAACTTTTCTCTCCTGCTTCTTTAGCTTGGTACAGCTCTG
TTTGCAACAAGATCCTGAGAAAGGCCATCAGCAAGCAGTTTATTGTCCCATGTTTCTTCAAAACAGATGAAAGAGAAGAA
GCCAGGATTCAATACTTTCACTGTTGCCCTCTGCTTATAACAAGCCATCAATATCATTTGCCCTCCAGTGTACCTTGGACT
GAGCCAGAAATGTGATTTTCCCTGATGAAAAAGACTCATACTGGGAAATTTCTAGGGCTGCCAAATCATTTTATGTCCTATATA
CTTGACACTTTCTCCTTGTGCTTTTCTTCTGTATTCTAGGTACAAATACCAGAAATATACITTGAAATAACAGTTGGT
GCACTGGAGAACTATTATTAAACCACTCTGTTCAAAGGGGCACCAAGTTGTAGTCCCTCTGTTTCGCACAGAGTACT
ATGACAAAGGAAACATCAGAAATTACTAATCTAGCTAGTGTCAATTTATTCTGGAAATTTTTTCTAAGCTGTGACTAATCTT

TTTATCTCTCAATATAATTTTIGAGCCAGTTAAATTTTTCAGTATTTTGTCTGCCCTTGGGAATGGGCCCTCAGAGGAC
AGTGCTTCCAAAGTACATCTTCTCCAGATCTCTGGCCCTTTTAAATGAGCTATTTGTTAAACCAACAGGCTAGTTTATCTT
ACATCAGACCCCTTTTCTGGTAGAGGGGAAATGTTTGTGCTTTTCCCTTTTCTTCTGTTAATACTTATGGTAACACCTAAC
TGAGCCCTCACTCACATTAAATGATTCACCTTGAAATATATACAGAAATTTGTAATTTGCTTTTAAAAAAGGGGGCTAA
AGTAACACTTTCCTACTTATGTAAATTATAGATCCTAAATTACGCAACCCCGTGGGAGCTCAATAAAGATTTACTGAATT
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TCAACAGGGACGATTACGAGCTGCAGGAGGTGATCGGGAGTGGAGCAACTGCTGTAGTCCAAGCAGCCTTATTGTGCCCCCT
AAAAAGGAGAAAGTGGCAATCAAAACGGATAAACCTTGAGAAATGTCAAACTAGCATGGATGAACCTCTGAAAGAAATTCA
AGCCATGAGTCAATGCCATCATCCTAAATATGTATCTTACIACACATCTTTTGTGGTAAAGATGAGCTGTGGCTTGTGTC
TGAAAGCTGCTAAGTGGAGGTTCTGTTCTGGATATATTAAGCACATTTGTGGCAAAAGGGGAACACAAAAGT

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ATGGCGGGACCTGGGGGCTGGAGGGACAGGGAGGTCAAGGATCTGGGCCACCTGCGCGGATCCAACCTGGAAATATCTCACT
AGATAAAACCATTTGGCCCTTGGTACTTATGGCAGAACTCTATTTGGGACTTCATGAGAAAGACTGGTGCAATTACAGCTGTTA
AAGTGATGAACGCTCGTAAGGATGAGGAAGAGGATCTCAGGACTGAACCTCAACCTTCTGAGGAAGTACTCTTCCACAAA
AACATTTGTGTCCTTCTATGGAGCATTTTTCAGCTGAGTCCCCCTGGTCAGCGGCCACCAACTTTGGATGGTGATGGAGTT
ATGTGAGCAGGTTTCGGTCACTGATGTAGTGAGAAATGACCAGTAATCAGAGTTTAAAGAAGATTGGATTGCTTATATCT
GCCGAGAAATCCTTCAGGGCTTAGCTCACCTTCACGCCACACCGAGTAATTCACCGGGACATCAAAAGGTCAAGATGTGCTG
CTGACTCATAAATGCTGAAGTAAACCTGGTTGATTTTGGAGTGAGTGCCCCAGGTGAGCAGAACTAAATGGAAAGGAATAG
TTTCAATTGGGACACCATACTGGATGGCACCTGAGGTGATTGACTGTGATGAGGACCCCAAGACGCTCCTATGATTACAGAA
GTGATGTGTGGTCTGTGGGAATTACTGCCATTGAAATGGCTGAAGGAGCCCTCCTCTGTGTAAACCTTCAACCCCTTGGAA
GCTCTCTTCGTTATTTTGGGGGAATCTGCTCCCCACAGTCAAAATCCAGCGGATGGTCCCGTAAGTTCCACAATTTTCATGGA
AAAGTGACGATAAAAAATTTCTGTTTCGTGCTACTTCTGCAACATGCTTCAACACCCCATTTGTTTCGGGATATAAAAA

Fig. 11C

ATGAACGACATGTTGTTGAGTCACTTAACAAGGCATCTTACTGGAAATCATTAATAAAGACAGAAAAAGAACAGGCACCG
GAGAAAAAATCAAAAGTTTCTACTCTGAGGCAAGCACTGGCAAAAGACTATCACCAAGAGGTTTCAGGGCAAAAGTCATC
ATGGAGACCTGAAAAGCTTGAACTCTCGGATTAGAAAGCCCGCAGGCCAAAGGCCAACGCAGATGGGAAGATATCTTTA
ATCAGCATGAGGAAGAAATTGAGACAAGTTGATAAAGACAAGAAAGATGAATCATCAGACAATGATGAAGTATTTTCATTCG
ATTCAGGCTGAAGTCCAGATAGAGCCATTGAAGCCATACATTTCAAAATCCTAAAAAATTGAGGTTCAAGAGAGATCTCC
TTCTGTGCCCTAACACACAGGATCATGCACATCATGTCAAGTTCTTTCAAGCCTTCCTCAGCGGTCTCTTTTGGAAACAAG
CTCAGAAAGCCCATTTGACATCAGACAAGGAGTTTCGCAAAATCGTCAAAATTGGCTGGCAGCATCAGGTGATTCAAGCAC
AAAAATTTAGCAGGCAAAACACAGAGCTACTGTTTAACAATTTATATTTCAAGAGTCAAGAAAGAAATTTCAAGAAAGG
AATGAATCAAAAGTGTCAAGGAGCCCAAGTAGGATTAGGACCTGAAGGCCATTGTATTTGGCCAATTGGGTGAATCTTCTT
CTGAGGAAGAAAGTCTGTGACTGGAAAGGAGTCTCAGTCATCACCACTTATTTCTACTATTGATCAGAAAGTTGCTGGTT
GACATCCATGTTCCAGATGGATTAAAGTAGGAAAAATATCACCCCTGTATACCTTGACAAACGAATGGGTAGGCTATAA
TGCACTCTCTGAAATCTTCCGGAATGATTGGTTAACTCCGGCACCTGTCAATTCAGCCACCTGAAGAGGATGGTGATTATG
TTGAACTCTATGATGCCAGTGCTGATACTGATGGTGATGATGATGAGTCTAATGATACCTTTTGAAGATACCTATGAT
CATGCCAATGGCAATGATGACTTGGATAACCAAGTTGATCAGGCTAATGATGTTTGTAAAGACCATGATGATGACAAACA
TAAGTTTGTGATGATGATAATAATAATTATATGAGGCGCTAGTTGTCCAAGGGCAAGCTATGGCAGAGATGGAAAGCT
GCAAGCAAGATGGTTATGATGGAGTCTGTGAAAAAGAGGAAGCTACAGAGGCTATGGAAAGCCATACAGCCCAATAGAAGC
CATGGAGGAAGTGCAGCCAGTGAGGACAAATGCAGCCATTGGAGATCAGGAAGAACATGCAGCCCAATATAGGCAGTGAAAG
AAGAGGCAGTGAGGGTGATGGAGGTAAAGGGAGTCGTTCGAACCCAGTGAAGAGAGTGGAGCCCTTGGACTCAATGGAGAAG
AAAAATGCTCAGAGACAGATGGTCCAGGATTGAAGAGACCTGCGTCTCAGGACITTTGAATATCTACAGGAGGCCAGGT
GGTGGAAATGAGGCCCTCAAAATGCCATTGACTCAGGTGCTGCACCCGTGAGCACCTTGATCATGAGAGTGACAAATAGGACAT
ATCAGAAATCATCAACACAATCAGATTTTCTGCCAATCACTCATCTCTTCCAAAGTTCTGGGATGCTGCTGATGCTA
ACTTTGCCAGTGCCATCTTATACGCTGGATTTCGTAGAAGTACCTTGAGGAATCACCTAAGCAACCTCTGAAGTCAATGTT
AACCACCTCTATGCTCTCTGCAATGTAATAAACCACTAATCCACATGTATGAAAAAGGAGTTCACCTTCTGAGATCTGCTG
TGGTTCTTTGTGGGGAGTCAATTTGCTGTTGGGAACCCGATCTAATCTATATCTGATGGACAGAAAGTGGAAAGGCTGACA
TTACTAAACTTATAAGCGGAAGACCATTCCGGCAGATTCAAGTCTTAGAGCCACTCAATTTGCTGATTACCATCTCAGGT

CATAAGAACAGACTTCGGGTGATCATCTGACCTGGTTGAGGAAACAAGATTTTGAATAATGATCCAGAAAGTAAAGAAG
GCAAGAAGAAATGCTGAAGACAGAGGAGCCCTGCAAAAGCTATTGATAAGTTAACAGGCTGTGAACACTTCAGTGTCTCTCC
AACATGAAGAAACAACATATATTGCAATTGCTTTGAAATCATCAATTACCTTTATGCATGGCACCAAGTCCTTTTGAT
GAAAGCACTGCTATTAAAGTATTTCCAACACTTGATCATAGCCAGTGACAGTTGACCTGGCTATTGGTTCTGAAAAAAG
ACTAAAGATTTTCTTCAGCTCAGCAGATGGATATCACCTCATCGATGCAGAACTTGAGGTTATGTCIGATGTGACCCCTGC
CAAAGAAATCCCCCTGGAAATCATTAACACAGAAATCATCATTTTACCTGATTGCTTGGGAAATTGGCATGATGCTCACCC
TTCAATGCTGAAGCCCTCTCTGTGGAGCAAAATGAACAACTCTTCAAGAAAGATCCTTGAAATGTGGAAAGACATACCATC
TTTCTATAGCTTTTGAAATGTACACAGCGAACCAACAGGATGGGGCCAAAAGGCCATTGAAGTGCCTCTTTGCAATCCAGGG
TTTCTGGAAAGTGAGCTGAAGCGCAGGTCAAATTAAGAAAGCTGAGATTCTGTGCACCCGGGGTGACAAAGCTGTTCTTTACCC
TTCTACCCCTGCGCAAATCACCCACAGCCGGGTTTACTTTCATGACACTTGAAAACTTGAAAGCTCCAAAGCAATTATGATGT
CTAA

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[illegible]

Fig. 11E

GAGGTGCCCCCAGCCCTGGAGTGTCTGGGACCCCAAGCCCTCAGAGCCCCAGCTGGCCCCCTCAGCCCTGCAACCCCGCCGCC
CCTGCTGTTCCTGGGCCCCCTGGCCCCCGCTACACAGCGGGAGCCACAGCGAGTATCCCATGAGCAGTTCCGGGCTGC
CCTGCAGCTGGTGTGACCCAGGCGACCCCGCTCTACCTGGACAACCTTCATCAAGATTGGCGAGGGCTCCACGGGCA
TCGTGTGCATCGCCACCGTGCGCAGCTCGGGCAAGCTGGTGCCGTCAAGAAAGATGGACCTGCGCAAGCAGAGAGGCGC
GAGCTGCTCTTCAACGAGGTGGTAATCATGAGGGAATACAGCAAGAAATGTGGTGGAGATGTACAACAGCTACCTGGT
GGGGACGAGCTCTGGGTGGTCAATGAGGTTCCTGGAAGGAGGCCCTCACCGACATCGTCACCCACAGGATGAACG
AGGAGCAGATCGCGGCCGTGTGCTTGCAGTGTGCAAGGCCCTGTGCGTCTCACCGCCAGGGCGTCAACCCGGGAC
ATCAAGAGCGACTCGATCCTGCTGACCCCATGATGGCAGGGTGAAGCTGTACAGACTTTGGGTCTCGGCCACAGGTGAGCAA
GGAAGTCCCCCGAAGGAAGTCGCTGGTCGCGCACGCCCTACTGGATGGCCCCAGAGCTCATCTCCGCCCTTCCCTACGGGC
CAGAGGTAGACATCTGGTGGCTGGGGATAATGGTGTATGAGATGGTGGACGGAGGCCCTTACTTCAACGAGCCACCC
CTCAAAGCCCATGAAGATGATTCTGGGACAACTGCCACCCGACTGAAGAACTTGACAAGGTGTGCCATCCCTGAAGGG
CTTCTCTGGACCCCTGCTGTGCGAGACCCCTGCCAGCGGGCCACGGCAGCCGAGCTGCTGAAGCACCCATTCCTGGCCA
AGGCAGGGCCGCTGCCAGCATCGTGGCCCCCTCATGCGCCAGAACCGCACCATGAGGCCCCAGCGCCCTTCCCTCAACC
AAGAGCCCCCGGGTCAACCCGCCACTGAGGCCAGTAGGGGCCAGGCCCTCCCACTCTCCAGCCCCGGGAGATG
CTCCGCTGGCACCCCTCTTGTCTGGGGTAGATGAGACCCCTACTAGAACTCCAGTTTGTATCTCGTGACTTTTAG
AAAACACAGGGACTCGTGGAGCAAGCGAGGCTCCAGGACCCCACTCTGGGACAGGCCCTCCCACTGTCTTCT
GTCTCCAGGAAGGCGAGCGCCCTCCCATCACTGGAACTCTGCAGTGGGGTCTGCTGGGGTGGAGAACACTAAGAGG
TGAACATGTATGAGTGTGTCACGCGTGTGAGTGTGATGTGTGTGTCGCAAGGTCCAGCCACCCCGTCTCCAGC
CCGCAAGGGGTGTCTGGCGCTTGCCTGACACCCAGCCCCCTCTCCCTGAGCCATTTGTGGGGTCCGATCATGAATGTC
CGAAGAGTGGCCTTTTCCGTAGCCCTGCGCCCCCTTCTGTGGCTGGATGGGGAGACAGGTCAAGGCCCTCCCACTCT
CCAGCCCCCTGCAGCAATGACTACTGCACCTGGACAGCCCTCTCTTTCTAGAACTATTTATATTGTATTTATAAC
ACTCTAGCCCCCTGCTTATTTGGGGGACAGATGGTCTCTGCTGGGGTGGCCCTGGCAGAACCACTGCCTGAAGAAC
CAGGTTCTCTGCCCCGTACAGCGCAGCCCCAGCCCCCTGCTGAGTTAGTTTACAAATTAACAATTTGTCTTGT
TTTGTG

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CGAAGCCACAGCCCGAGCCCGAGCCCGGCGGCCACCGGCCCGCCCGGCCATGGCTTTTGCCAAATTCGGCC
GCATCCCTGGCCCTGTCTACCTTCGAGAGAGAAAGTCCCGCGAATATGAGCACGTCCCGCGGACCTGGACCCCAACGAG
GTGTGGGAGATCGTGGCGGAGCTGGCGGACGCGCCCTTCGGCAAGGTTTACAAGGCCAAGAAATAAGGAGACGGGTGCTTT
GGCTGGGGCCAAAGTCAATTGAACCAAGAGTGAGGAGCTGGAGGACTACATCTGTGGAGATTGAGATCCTGGCCACCT
GGACCCACCCCTACATTGTGAAGCTCCTGGAGCCTACTATCACGACGGGAAGCTGTGGATCATGATTGAGTTCGTGCCA
GGGGAGCCGTGGACGCCCATCATGTCTGGAGCTGGACAGAGCCCTCACGGAGCCCCAGATACAGGTGGTTTGGCCGCCAGAT
GCTAGAAGCCCTCAACTTCCTGCACAGCAAGAGGATCATCCACCGAGATCTGAAGCTGGCAACGTGCTGATGACCCCTCG
AGGAGACATCAGGCTGGCTGACTTTGGTGTCTGCCAAGAACTCTGAAGACTCTACAGAAACGAGATTCTTTCATCGGC
ACGCCCTTACTGGATGGCCCGAGGTGGTTCATGTGTGAGACCATGAAGACACGCCCTACGACTACAAGCCGACATCTG
GTCCCTGGGCATCACGCTGATTGAGATGGCCCGAGATCGAGCCGCCACACCGAGCTCAACCCCATGCGGCTCTGCTAA
AGATCGCCAAAGTCGGACCCCTCCACGCTGCTCACGCCCTCCAAGTGGTCTGTAGAGTTCCTGAGTTCCTGAAGATAGCC
CTGGATAAGAAACCCAGAACCCGACCCAGTGCCGCGAGCTGTCTGGAGCATCCCTTCGTGAGCAGCATCACAGTAACAA
GGCTCTGCGGAGCTGGTGGCTGAGGCCAAGCCGAGGTGATGGAAAGAGATCGAAGACGGCCGGGATGAGGGGGAAGAGG
AGGACGCCGTGGATGCCGCCCTCCACCCCTGGAGAACCATACTCAGAACTCCTCTGAGGTGAGTCCGCCAAGCCTCAATGCT
GACAAAGCCTCTCGAGGAGTCACTTCCACCCCGCTGGCACCCAGCCAGTCTCAGGACAGTGTGAATGAGCCCTGCAGCCCA
GCCCTCTGGGACAGATCCCTCCAAACCAACAGTCCCGCCAGTCTGGCCCTGGAAATGAGAACGGCCCTGGCAGTGCCTG
TGCCCTCGCGAAGTCCCGACCCGTGTCAATGGATGCCAGAAATTCAGGTAGCCCCAGGAGAACAGTTGCTGAGCAGGGT
GGGGACCTCAGCCCGAGCCACAGATCTCAAAAGGCCAGCCAGAGCCGCCCAACAGCAGGCCCTGGAGACCTTGGG
TGGGGAGAAAGCTGGCCCAATGGCAGCCCTGGAGCCACCTGCCAGGCGAGCTCCAGGGCCCTTCCAAGAGGACTCGGACTGCA
GCAGCCTCTGCACCTCTGAGAGCATGGACTATGGTACCAATCTCTCCACTGACCTGTGCTGAACAAAGAGATGGGCTCT
CTGTCCATCAAGGACCCGAACTGTACAAAACCCCTCAAGCGGACACGCAAAATTTGTGGTGGATGGTGTGGAGGTGAG
CATCACCACTCCAAGATCATCAGCGAAGATGAGAGAAAGGATGAGGAGATGAGATTTCTCAGGCCCCAGGAACCTCCGAG
AGCTTCGGCTGCTCCAGAAAGAGGCAATCGGAACCAAGCCAGCTGAGTAACAAAGCATGAGCTGCAGCTGGAGCAAAATG
CATAACGTTTTGAACAGGAAATCAACGCCCAAGAGAAAGTTCTTTGACACGGGAATTAGAGAACCTGGAGCGTCAAGCAAAA

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Fig. 11G

GCAGCAAGTGGAGAAGATGGAGCAAGACCATGCCGTGCGCCGCGGGAGGAGGCCAGGGGGATCCGCCCTGGAGCAGGATC
GGGACTACACCAAGGTTCCAAGAGCAGCTCAAACTGATGAAGAAAGAGGTGAAGAACGAGGTGGAGAAAGCTCCCCGACAG
CAGCGGAAGGAAGCATGAAGCAGAAGATGGAGGAGCACACGCAGAAAGCAGCTTCTTGACCGGACTTTGTAGCCAA
GCAGAGGAGGACCTGGAGCTGGCCATGAAGAGGCTCACCAACCGACAACAGCGGGGAGATCTGTGACAAAGGCGCGAGT
GCCCTCATGAAGAAGCAGGAGCTCCITTCGAGACCGGGAGCAGCCCTGTGGGAGATGGAAAGCACCAGCTGCAGGAGAGG
CACCAGCTGGTGAAGCAGCAGCTCAAAGACCACTTCTCCAGCGGCACGAGCTGCTGCCCAAGCATGAGAAAGGAGCG
GGAGCAGATGCAGCGCTACAACCAAGCGCATGATAGCAGCTGAAGTGGGAGCAACAGGAAAGCGCGCTGCCCA
AGATCCAGAGGAGTGAGGGCAAGACGGCATGGCCATGTACAAGAGAGCTCCACATCAACGGCGGGGCGAGCGCAGCT
GAGCAGCGTGAGAAGATCAAGCAGTTCTCCAGCAGGAGGAGAGGCAAGTCCGAGCGGCTGCAGCAACAGCAGAA
ACACGAGAACCAAGATGCGGGACATGCTGGCGCAGTGCAGAGCAACATGAGCGAGCTGCAGAGCTGCAGAAATGAAAAGT
GCCACCTCCTGGTAGAGCACGAAACCCAGAAACTGAAGGCCCTGGATGAGAGCCATAACCAAGAACCTGAAGGAATGGCGG
GACAAAGCTTCGGCCGCGCAAGAGGCTCTGGAAAGAGGATCTGAACCAGAAAGCGGGAGCAGGAGATGTTCTTCAAGCT
GAGCGAGGAGCGGAGTGCCCCAAACCCCTCCACCCCAAGCAAGGCCCAAGTTCTTCCCCCTACAGCTCTGGGGATGCTT
CC

Fig. 11H

STLK6_h	-----MSL	D	C	F	C	T	S	R	T	Q	V	E	S	L	R	P	E	K	Q	S	E	T	S	I	H	Q	Y	L	V	D	E	P	T	L	S	W	S	R	41																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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SPAK_h	MAEP	S	G	S	P	V	H	V	Q	L	P	Q	Q	A	A	P	V	T	A	A	A	A	P	A	A	T	A	A	P	A	P	A	P	A	P	A	P	A	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
STLK6_h	P	S	T	R	A	S	E	-	V	L	C	S	T	N	V	S	H	Y	E	L	Q	V	E	I	G	R	G	F	D	N	L	T	S	V	H	L	A	R	H	T	P	T	G	T	L	V	T	I	K	I	90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
STLK5_h	-----																																														9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
SPAK_h	P	A	A	Q	A	V	G	W	P	I	C	R	D	A	-	-	-	Y	E	L	Q	E	V	I	G	S	G	A	T	A	V	-	-	V	Q	A	A	L	C	K	P	R	Q	E	R	V	A	I	K	R	95																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
STLK7_h	-----																																														35																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

Fig. 12A

METHODS

Inventor(s): Gregory PLOWMAN

et al.

Attorney Docket No.: 034536-0688

67176

Fig. 12B

PAK1_h U51120	MSNNGLDIQDKPPAPPMRNTSTMIGAGSKDAGTLNHGSKPLPPNPEEKKKDRFYRSILP	60
PAK4_h	-----	0
PAK5_h	-----	0
PAK1_h U51120	GDKTNKKKEKERPEISLPSDFEHTIHVGFDAVI-GEFTGMPEQWARLLQTSNITKS	115
PAK4_h	---MFRKKKKRRPEISAPQNFQHRVHTSFDPKEGKFVGLPPQWQNIID-TIRRPKPVVDP	56
PAK5_h	---MF-GKRKKRVEISAPSNFEHRVHTGFDQHEQKFTGLPRQWQSLIEESARRPKPLVDP	56
PAK1_h U51120	-----	115
PAK4_h	SRIIRVQLQPMKTVVRGSA MPVDGYISGLLNDIQKLSVISSNTLRGRSPTSRRAQLGL	116
PAK5_h	ACITSIQPGAPKTIIVRGSKGAKDGA LTL LLD E FENM SVTRSN SLRRDSPPPARAR	112
PAK1_h U51120	-----	115
PAK4_h	LGDEHWATDPDMYLQSPQSERTDPHGLYLSGNGGTPAGHKQMPWPEPQSPRVLPNGLA AK	176
PAK5_h	-----QENGMP EEPAT TARGGP GK	131
PAK1_h U51120	-----	127
PAK4_h	AQSLGPAEFQGA SQRCLQLGACLQSSPPIGA SPPTGTNRHGMKA AKH GSEEARPQSCLVGS	236
PAK5_h	AGSRGR-----FAGHSEAGGSGGDRRRAGPEKRPKSSRREGSGGPQESSRDKRP--LSGP	183
PAK1_h U51120	LEFY-NSKKTSNSQKYM SFTDKS-----AEDYNSSNALNVKA-----VSETPAVPPVS	174
PAK4_h	ATGRPGGEGSPSPK TRESSLKRRLFRSMFLSTAATAPSSSKPGPPQSKPNSSFRPPQK	296
PAK5_h	DVGTPQPA GLASGAKLAAG-----RPFNTYPRADTDHP SRGAQGE PHDVAPNGP-----	232

Fig. 13A

PAK1_h U51120	E	E	D	E	D	D	D	D	D	A	T	P	P	P	V	I	A	P	R	P	E	H	T	K	S	V	T	R	S	-	-	-	-	V	I	E	P	L	P	V	T	P	T	R	D	V	A	T	S	P	I	S	P	T	E	N	N	T	230			
PAK4_h	D	N	P	P	S	L	V	A	K	A	Q	S	L	P	S	D	Q	P	V	G	T	F	S	P	L	T	S	D	T	S	S	P	Q	K	S	L	R	T	A	P	A	T	G	Q	L	P	G	R	S	S	P	A	G	S	P	R	T	W	H	356		
PAK5_h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	S	A	G	G	L	A	T	P	O	S	S	S	S	R	P	P	T	R	A	R	G	A	P	S	P	G	V	L	-	-	-	-	-	-	-	-	-	G	P	H	A	S	E	268	
PAK1_h U51120	P	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	P	D	A	L	T	L	N	T	E	K	Q	K	K	P	K	M	S	D	E	E	I	L	E	K	L	R	S	I	V	S	V	G	D	P	K	K	K	Y	T	R	F	E	K	I	276
PAK4_h	A	Q	T	S	T	S	N	L	Y	L	P	Q	D	P	T	V	A	K	G	A	-	-	-	L	A	G	E	D	T	G	V	V	T	H	E	Q	F	K	A	A	L	R	M	V	V	D	Q	G	D	P	R	L	L	D	S	Y	V	K	I	413		
PAK5_h	P	Q	L	A	P	P	A	-	C	T	P	A	A	P	A	V	P	G	P	G	P	R	S	P	Q	R	E	P	Q	R	V	S	H	E	Q	F	R	A	A	L	Q	L	V	V	D	P	G	D	P	R	S	Y	L	D	N	F	I	K	I	327		
PAK1_h U51120	G	Q	G	A	S	G	T	V	Y	T	A	M	D	V	A	T	G	Q	E	V	A	T	K	Q	M	N	L	Q	Q	P	K	K	E	L	I	I	N	E	L	V	M	R	E	N	K	N	I	V	N	Y	L	D	S	Y	L	V	336					
PAK4_h	G	E	G	S	T	G	I	V	C	L	A	R	E	K	H	S	G	R	Q	V	A	V	K	M	M	D	L	R	K	Q	Q	R	R	E	L	L	F	N	E	V	I	M	R	D	Y	Q	H	E	N	V	V	E	M	Y	K	S	Y	L	V	473		
PAK5_h	G	E	G	S	T	G	I	V	C	I	A	T	V	R	S	S	G	K	L	V	A	V	K	K	M	D	L	R	K	Q	Q	R	R	E	L	L	F	N	E	V	I	M	R	D	Y	Q	H	E	N	V	V	E	M	Y	N	S	Y	L	V	387		
PAK1_h U51120	G	D	E	L	W	V	V	M	E	Y	L	A	G	G	S	L	T	D	V	V	T	E	T	C	M	D	E	G	Q	I	A	A	V	C	R	E	C	L	Q	A	L	E	S	L	H	S	N	Q	V	I	H	R	D	I	K	S	D	N	I	L	396	
PAK4_h	G	E	E	L	W	V	L	M	E	F	L	Q	G	A	L	T	D	I	V	S	Q	V	R	L	N	E	E	Q	I	A	T	V	C	E	A	V	L	Q	A	L	A	Y	L	H	A	Q	G	V	I	H	R	D	I	K	S	D	S	I	L	533		
PAK5_h	G	D	E	L	W	V	V	M	E	F	L	E	G	G	A	L	T	D	I	V	T	H	T	R	M	N	E	E	Q	I	A	A	V	C	L	A	V	L	Q	A	L	S	V	L	H	A	Q	G	V	I	H	R	D	I	K	S	D	S	I	L	447	
PAK1_h U51120	L	G	M	D	G	S	V	K	L	I	D	F	G	F	C	A	Q	I	T	P	E	Q	S	K	R	S	T	M	V	G	T	P	Y	W	M	A	P	E	V	V	T	R	K	A	Y	G	P	K	V	D	I	W	S	L	G	I	M	A	I	E	456	
PAK4_h	L	T	L	D	G	R	V	K	L	S	D	F	G	F	C	A	Q	I	S	K	D	V	P	K	R	K	S	L	V	G	T	P	Y	W	M	A	P	E	V	I	S	R	S	L	Y	A	T	E	V	D	I	W	S	L	G	I	M	V	I	E	593	
PAK5_h	L	T	H	D	G	R	V	K	L	S	D	F	G	F	C	A	Q	V	S	K	E	V	P	R	R	K	S	L	V	G	T	P	Y	W	M	A	P	E	L	I	S	R	L	P	Y	G	P	E	V	D	I	W	S	L	G	I	M	V	I	E	507	
PAK1_h U51120	M	I	E	G	E	P	P	Y	L	N	E	N	P	L	R	A	L	Y	L	I	A	T	N	G	T	P	E	L	Q	N	P	E	K	L	S	A	T	F	R	D	F	L	N	R	C	L	E	M	D	V	E	K	R	G	S	A	K	E	L	L	516	
PAK4_h	M	V	D	G	E	P	P	Y	F	S	D	S	P	V	Q	A	M	K	R	L	R	D	S	P	P	K	L	K	N	S	H	K	V	S	P	V	L	R	D	F	L	E	R	M	L	V	R	D	P	Q	E	R	A	T	A	Q	E	L	L	653		
PAK5_h	M	V	D	G	E	P	P	Y	F	N	E	P	L	K	A	M	K	M	I	R	D	N	L	P	P	R	L	K	N	L	H	K	V	S	P	S	L	K	G	F	L	D	R	L	L	V	R	D	P	A	Q	R	A	T	A	E	L	L	567			

Fig. 13B

Title: PAK5 SCREENING METHODS

Inventor(s): Gregory PLOWMAN et al.

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PAK1_h U51120

PAK4_h

PAK5_h

Q	H	Q	F	L	K	I	A	K	P	L	S	S	L	I	P	L	I	A	A	K	E	A	T	K	N	N	H
D	H	P	F	L	L	Q	T	G	L	P	E	C	L	V	P	L	I	Q	L	Y	R	K	Q	T	S	T	C
K	H	P	F	L	A	K	A	G	P	P	A	S	I	V	P	L	M	R	Q	N	R	I	R	T			

545
681
591

- ☒ RESIDUES THAT MATCH THE CONSENSUS NAMED CONSENSUS #1 EXACTLY.
- ☐ BOX RESIDUES THAT MATCH THE CONSENSUS EXACTLY.

Fig. 13C

ZC4_h.pro	MAGPGGWDRREVTDLGHLDPDTGIFSLDKTIGLGTYGRIYLGGLHEKTGAF	50
ZC1_h.pro	MANDSPAKSLVDIDLSSLRDPAGIFE[L]VEVVGNGTYGQVYKGRHVKTGTQL	50
ZC4_h.pro	TAVKVMNARKDEEEDLRT[ELNLLRKYSFHKNIVSFYGAFFKLSPPGQRHQ	100
ZC1_h.pro	AAI[KVM]DVTEDEEEEIKLEI[NML]KKYSH[HRN]IATYYGAFI[KKSPPGHDDQ	100
ZC4_h.pro	LWMVME[LCAGSVTDVVRMT]SNQSLKEDWIAIYICREILQGLAHLHAHRVI	150
ZC1_h.pro	LW[L]VME[FCGAGSIITD]LVKNT[KGNTILKEDWIAIYISREILRGLAHLHIHVI	150
ZC4_h.pro	HRDIKGGQNVLLTHNAEVKLVDFGVSAQVSR[NTNGRRNSFIGTPTYWMAPEVI	200
ZC1_h.pro	HRDIKGGQNVLLTE[NAEVKLVDFGVSAQ]LDRTV[GRRNTFIGTPTYWMAPEVI	200
ZC4_h.pro	DCDEDPRRSYDYRS[DVWSVGITAIEMAEGAPPLCNLOPLEAFVILRESA	250
ZC1_h.pro	ACDENP[DATYDYRS]DLW[SCGITAIEMAEGAPPLCD]MHPMRALFLIP[RNPP	250
ZC4_h.pro	PTVKSSGWSRK[FHNFMEKCTIKNFLEFPT]SANMLQHPFVRDIKNERHVVE	300
ZC1_h.pro	PRLKS[KKW]SKKFFS[FI]EGCLVKNYMQRP[STEQLLKH]PFTIRDQPN[ERQ]VRI	300
ZC4_h.pro	SLTRHLTGIIKKR[-----QKKEQAREKKS	324
ZC1_h.pro	QLKDHIDRTR[KKR]GEKDETEYEYSGSEEEEEVEPEQEGEPSSIVNVPGES	350
ZC4_h.pro	KVSTLRQALAKRLSPKRFRAKSSWRPEKLELSDLEARRQRRORRWEDIFN	374
ZC1_h.pro	TLRRDFLR[L]QQENKERSEALRRQQLLQEQL[REQE]EYKRQLLAERQKRIE	400
ZC4_h.pro	QHEEELRQVDKDKED[ESSDNDEVFH]SIOAEVQIEPLKPYISNPKKIEVQE	424
ZC1_h.pro	QQKEQR[R]RLEEQQRR[EREARRQQEREQRRREQ]EEKRRLEELERRRK[EE]EE	450

Fig. 14A

ZC4_h.pro	RSPSPNNQDHAHHVKFSSVPPQRSLLLEQAQKPIDIRQRSSQNRRQNWLAA	474
ZC1_h.pro	RRRAEEKRRVEREQEYIRRRQLEEEQRHLEVLQQQLLQEQAMLLLECRWRE	500
ZC4_h.pro	SGDSKHKILAGKTQSYCLTIYIYISEVKKKEEFQEGMNQKCCQGAQVGLGPEGH	524
ZC1_h.pro	MEEHRQAERLQRQLQEQAYLLSLQHDHRRPHPHQSQQPPPPQQERSKPS	550
ZC4_h.pro	CIWQLGESSSEESPVTGRRSQSSPPYSTIDQKLLVDIHVPDGGFKVGKIS	574
ZC1_h.pro	FHAPEPKAHYEPAADRAAREVEDRFRKTNHSSPEAQSKQTGRVLEPPVPSRS	600
ZC4_h.pro	PPVYLTNWVGYNALSEIFRNDWLTAPVIOPPPEEDGDYVELYDASADTD	624
ZC1_h.pro	ESFSNGNSESVHPALQRPAPQVPVRTTSRSPVLSRRDSPLQGSGQQNSQ	650
ZC4_h.pro	GDDDESNDFEDTYDHANGNDLDNQVDQANDVCKDHDDNNKFVDDVN	674
ZC1_h.pro	AGQRNSTIEPRLLWERVEKLVPRPGSGSSGSSNSGSPGSHPGSQSGS	700
ZC4_h.pro	NNYYEAPSCPRASYGRDGGCKQDGYDGSRGKEEAYRGYGSHTANRSHGGS	724
ZC1_h.pro	GERFRVRSSSKSEGPSQRLENVAVKKPEDKKEVFRPLKPADLTALAKELR	750
ZC4_h.pro	AASEDNAAIGDQEEHAANTIGSERRGSEGDGKGKVVRTSEESGALGLNGEE	774
ZC1_h.pro	AVEDVRPPHKVTDYSSSSEESGTTDEEDDVEQEGADESTSGPEDTRAAS	800
ZC4_h.pro	NCSETDGPGLKRPASODFEYLQEPGGGNEASNAIDSGAAPSPDHESDN	824
ZC1_h.pro	SLNLSNGETESVKTMIVHDDVESEPAMTPSKEGTLIVRRRTQSSSTLQKH	850
ZC4_h.pro	KDISESSTQSDFSANHSSPSKGSGMSADANFASAILYAGFVEVPPEESPKQ	874
ZC1_h.pro	KSSSFTPFIDPRLLQISPSISGTTVTSVVGFSKCDGMRPE--AIRQDPTRK	898

Fig. 14B

ZC4_h.pro	PSEVNPNLYVSPACKKPLIHMYEKEFTSEICCGSLWGVNLLLGTRSNLY	924
ZC1_h.pro	GSVVNVNPTNTRPQSDTPEIRKYEKRFENSEILCAALWGVNLLVGTESGLM	948
ZC4_h.pro	LMDRSGKADITKLI RRRPFRQIQVLEPLNLLITISGHKNRLRVYHLLTWLR	974
ZC1_h.pro	LIDRSGQGKVPPLINRRRREFQQMDVLEGLNVILVTISGKKDKLRVYLSWLR	998
ZC4_h.pro	NKILNNDPESKRRQE- EMLKTEEACKAIDKLTGCEHFSVLQHEETIYIAI	1023
ZC1_h.pro	NKILHNDPEVEKKIQGWT-----TVGDLEGCVHYKVVKYERIKFLVI	1039
ZC4_h.pro	ALKSSIHL YAWAPKSFDESTAIKVFP TLDHKPVTVDLAIGSEKRLKIFFS	1073
ZC1_h.pro	ALKSSVEVYAWAPKPYHKFM AFKSEGE L VHKP L LVDLTVEEGQRLKVIYG	1089
ZC4_h.pro	SADGYHLIDAESEVMSDVTLPKNPLEIIPQNI I ILPDCLGTGMMLTFNA	1123
ZC1_h.pro	SCAGFHAVDVDSGSVYDIYLP THIQCSIKPHAI I ILPNTDGMELLVCYED	1139
ZC4_h.pro	EALSVEANEQLFKKILEMWKDIPSSIAFECTQRTTGWGQKAEVRSLSQR	1173
ZC1_h.pro	EGVYVNTYGRITTKD VVLQWIGEMPTSVAYIRSNQITMGWGEKAEIRSVETG	1189
ZC4_h.pro	VLESELKRRSISKLRFLCTRGDKLFFFTSTLRNHHSRVYFMTLGKLEELQS	1223
ZC1_h.pro	HL DGVFMHKRAQR LKFLCERNDKVFFA SVRS GGS SQVYFMTLGRTSLLSW	1239
ZC4_h.pro	NYDV	1227
ZC1_h.pro		1239

 BOX RESIDUES THAT MATCH ZC4_h.pro EXACTLY.

Fig. 14C

Title: PAK5 SCREENING

METHODS

Inventor(s): Gregory PLOWMAN

et al.

Attorney Docket No.: 034536-0688

Db = LOK1_m

Qy = GEK2_h

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*****
1  MAFANFRIRLSTFEKRKSREYEHVRRDLDPNDVWEIVGELGDGAFGKVYKAKNKETGA 60
Qy 1  MAFANFRIRLSTFEKRKSREYEHVRRDLDPNEVWEIVGELGDGAFGKVYKAKNKETGA 60

*****
61 LAAAKVIETKSEEELEDYIVEIEILATCDHPYIVKLLGAYYYDGKLVIMIEFCPPGGAVDA 120
Qy 61 LAAAKVIETKSEEELEDYIVEIEILATCDHPYIVKLLGAYYYHDGKLVIMIEFCPPGGAVDA 120

*****
121 IMLELDRGLTEPQIQVVCRCQMLEALNFLHGKRIIHRDLKAGNVLMTLEGDIRLADFGVSA 180
Qy 121 IMLELDRGLTEPQIQVVCRCQMLEALNFLHSGKRIIHRDLKAGNVLMTLEGDIRLADFGVSA 180

*****
181 KNLKTLLQKRDSFIGTPYWMAPENVLCETMKDAPYDYKADIWSLGITLIEMAQIEPPHHEL 240
Qy 181 KNLKTLLQKRDSFIGTPYWMAPENVVMCETMKDTPYDYKADIWSLGITLIEMAQIEPPHHEL 240

*****
241 NPMRVLLKIAKSDPPTLLTPSKWSVEFRDFLKIALLDKNPETRPSAAQLLQHPFVSRVTSN 300
Qy 241 NPMRVLLKIAKSDPPTLLTPSKWSVEFRDFLKIALLDKNPETRPSAAQLLEHPFVSSITSN 300

*****
301 KALRELVAEAKAEVMEEIEDGREGDEEEDAVDAVPPLVNHTQDSANVTQPSLDSNKLLQD 360
Qy 301 KALRELVAEAKAEVMEEIEDGRDEGEEDAVDAASTLENHTQNSSEVSPPSLNADKPLEE 360

```

Fig. 15A

* * * * *
Db 361 S-STPLPPSQPEPVNGPCSPSGDGPLQTTSPADGLSKNDNDLKVPVPLRKSRPLSMDA 419
Qy 361 SPSTPLAPSQSQDSVNEPCSPSGDRSLQTTSPPVVAPGNENGLAVPVPLRKSRPVSM DA 420

* * * * *
Db 420 RIQMDEEKQIPDQDENPSPAASKSQKANQSRPNSSALETLGGEALTNNGGLELPSSVTPSH 479
Qy 421 RIQVAQEKQVAEQGGDLSPAANRSQKASQSRPNSSALETLGGEKLANGSLEPPAQAA PGP 480

* * * * *
Db 480 SKRASDCSNLSTSESM DYGTSL SADLSLNKETGSLSLKSGSKLHNKTLKRTRRFVVDGVEV 539
Qy 481 SKRDSDCSSLCTSESM DYGTNLSTDL SLNKEMGSLSIKDPKLYKKTLKRTRKFVVDGVEV 540

* * * * *
Db 540 SITTSKIISEDEKKDEEMRFLRRQELRELRL LQKEEHRNQTQLSSKH ELQLEQM HKRFEQ 599
Qy 541 SITTSKIISEDEKKDEEMRFLRRQELRELRL LQKEEHRNQTQLSNKH ELQLEQM HKRFEQ 600

* * * * *
Db 600 EINAKKKFYDVLENLERQQKQVEKMEQDHSVRRKEEAKRIRLEQDRDYAKFQEQLKQM 659
Qy 601 EINAKKKFFDTELENLERQQKQVEKMEQDHA VRRREEARRIRLEQDRDYTRFQEQLKLM 660

* * * * *
Db 660 KKEVKSEVEKLP RQQRKESMKQKMEEHSQKKQRLDRDFVAKQKEDLELAMRKLTTENRRE 719
Qy 661 KKEVKNEVEKLP RQQRKESMKQKMEEHTQKKQLLDRDFVAKQKEDLELAMRKLTTDN RRE 720

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Db	720	ICDKERDCLSKKQELLRDREAALWEMEEHQLQERHQLVKQQLKDDQYFLQRHDLRLRKHEKE	779
Qy	721	ICDKERECLMKKQELLRDREAALWEMEEHQLQERHQLVKQQLKDDQYFLQRHELRLRKHEKE	780
Db	780	REQMQRYNQRMMEQLKVRQQQEKARLPKIQRSDGETRMAMYKKSLHINGAGSASEQREKI	839
Qy	781	REQMQRYNQRMIEQLKVRQQQEKARLPKIQRSEGKTRMAMYKKSLHINGGSAAEQREKI	840
Db	840	KQFSQQ'EEEKRQKAERLQQQKKHEHQMRDMVAQCESNMSELQQLQNEKCYLLVEHETQKLK	899
Qy	841	KQFSQQ'EEEKRQKSERLQQQKKHENQMRDMLAQCESNMSELQQLQNEKCHLLVEHETQKLK	900
Db	900	ALDESHNQSLKEWRDKLRPRKKALEEDLNQKKREQEMFFKLSEAE-PRPTTPSKASNFF	958
Qy	901	ALDESHNQNLKEWRDKLRPRKKALEEDLNQKKREQEMFFKLSEAECPNPSTPSKAAKFF	960
Db	959	PYSSGDAS	966
Qy	961	PYSSGDAS	968

Fig. 15C